

TECHNOLOGY DEPT.

PURCHASING

SEPTEMBER, 1950

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DETROIT

Cover Photo, Herb Gaston, see page 71

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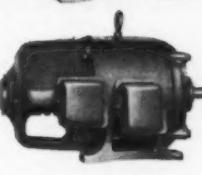
TYPE SC—Explosion proof. Protects life and property in atmospheres charged with explosive dusts or gases.

TYPE SR—Wound Rotor. Open Construction. Ideal for applications requiring low starting current with high starting torque, reversing or adjustable speed.

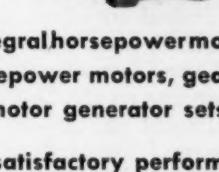
TYPE SR—Wound Rotor Splash proof. Same electrical characteristics as motor shown above. In addition, gives adequate protection against falling and splashing liquids.

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TYPE RS—Repulsion Start Induction, Open Construction, Single Phase Brush Lifting Motor. Combines high starting torque with low starting current.



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Each lengthwise cord in this B. F. Goodrich belt is completely surrounded by rubber — no cross threads tie them together. The rubber-borne cord body has practically the same impact resistance as the cover itself. Cords are free to "give" when an impact

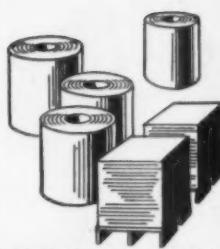
occurs. It distorts temporarily, distributing and absorbing a shock that would damage stiff, unyielding plies.

In addition to the regular cord body in a B. F. Goodrich cord belt, a patented *Transcord breaker* has been added. It's an extra layer of parallel cords in rubber, placed across belt width.

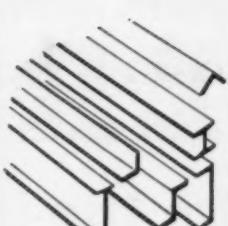
The impact cushion of the cord belt resists cuts and gouges; the Transcord breaker keeps the cover from stretching beyond elastic limits, provides better adhesion between cover and carcass. With each tightly twisted cord completely sealed in rubber, the cord belt resists effects of acid materials, moisture, mildew.

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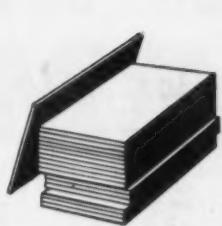
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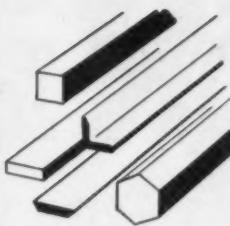
HOT AND COLD ROLLED SHEETS AND STRIP



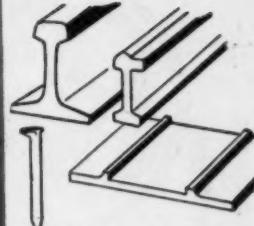
STRUCTURAL SHAPES



CARBON STEEL PLATES



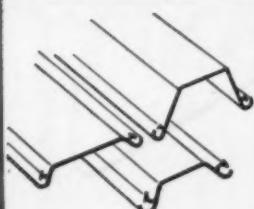
CARBON STEEL BARS



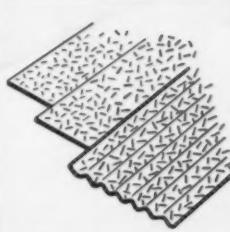
RAILS AND TRACK ACCESSORIES



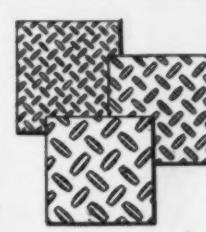
HI-BOND^{*} REINFORCING BARS



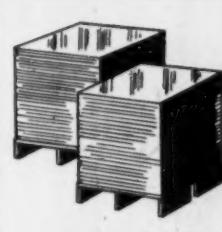
SHEET PILING



GALVANIZED SHEET PRODUCTS



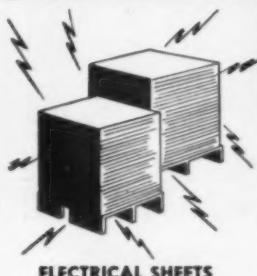
4-WAY^{*} SAFETY PLATE



TIN MILL PRODUCTS

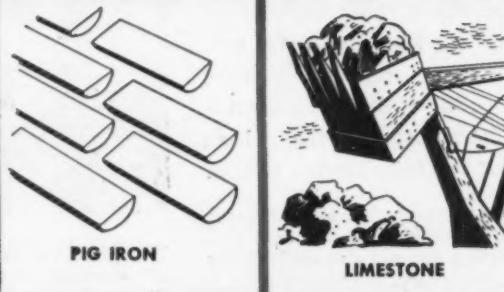


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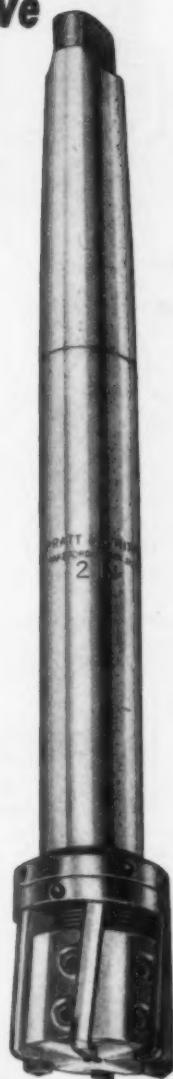
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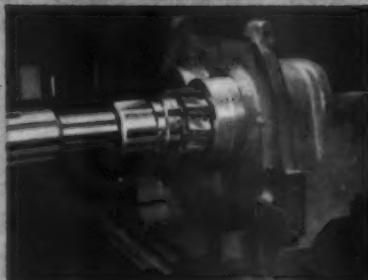
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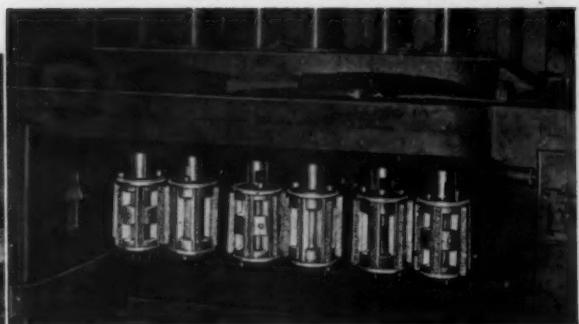
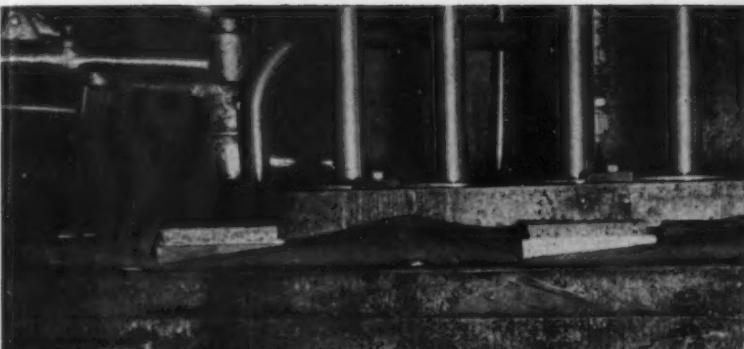
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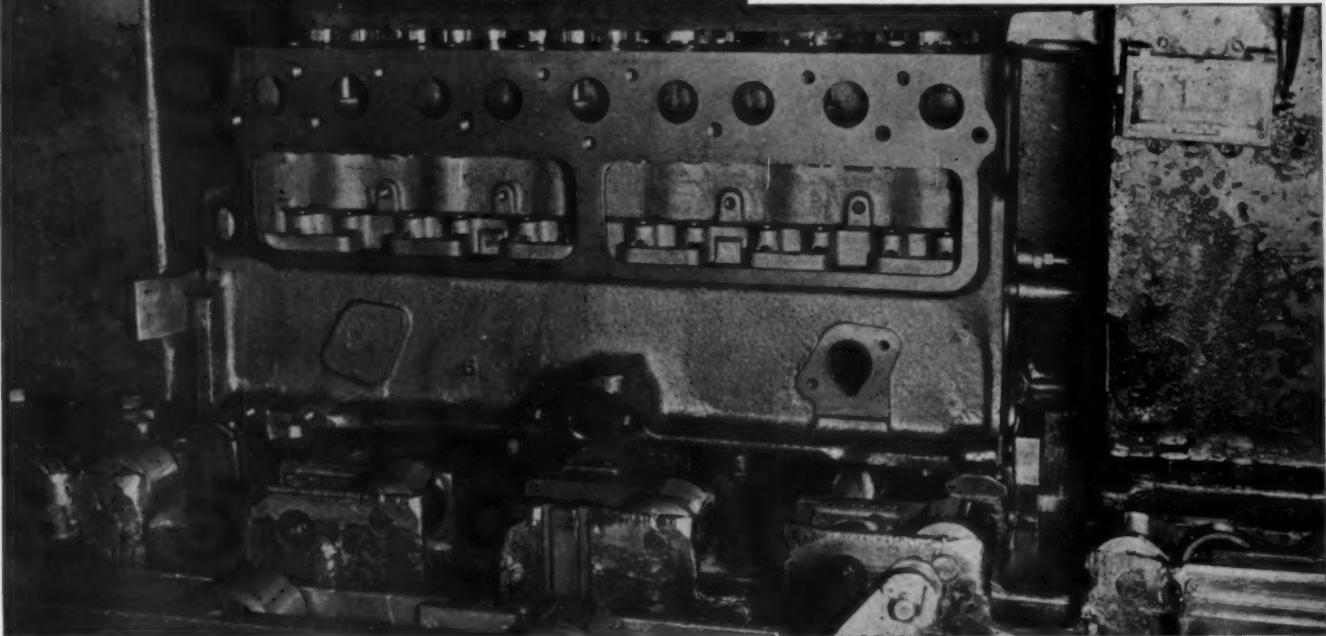
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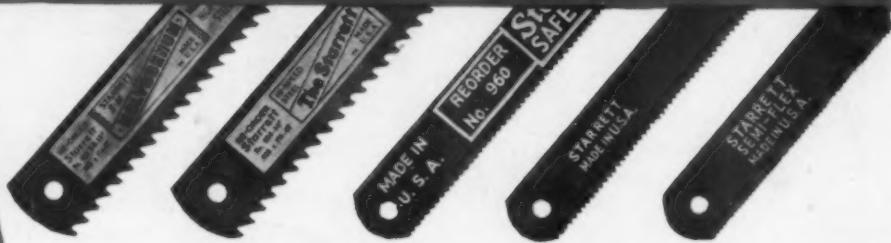
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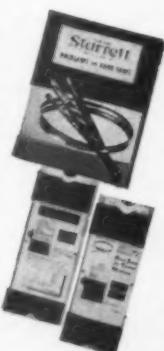


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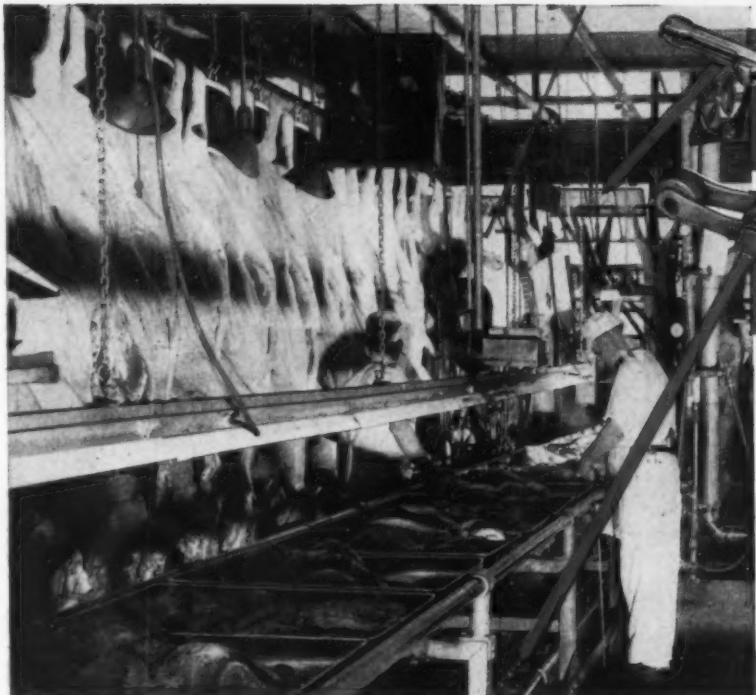
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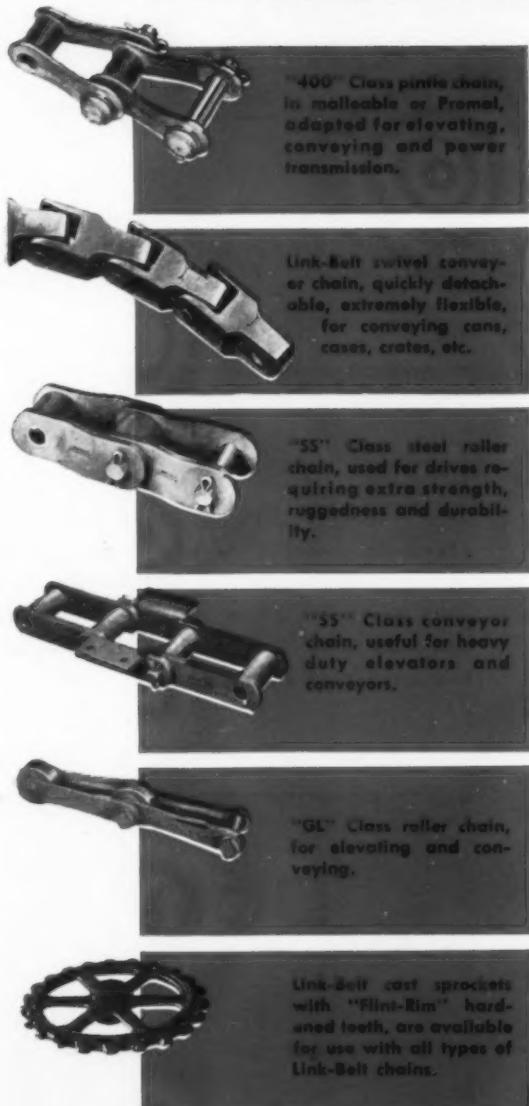


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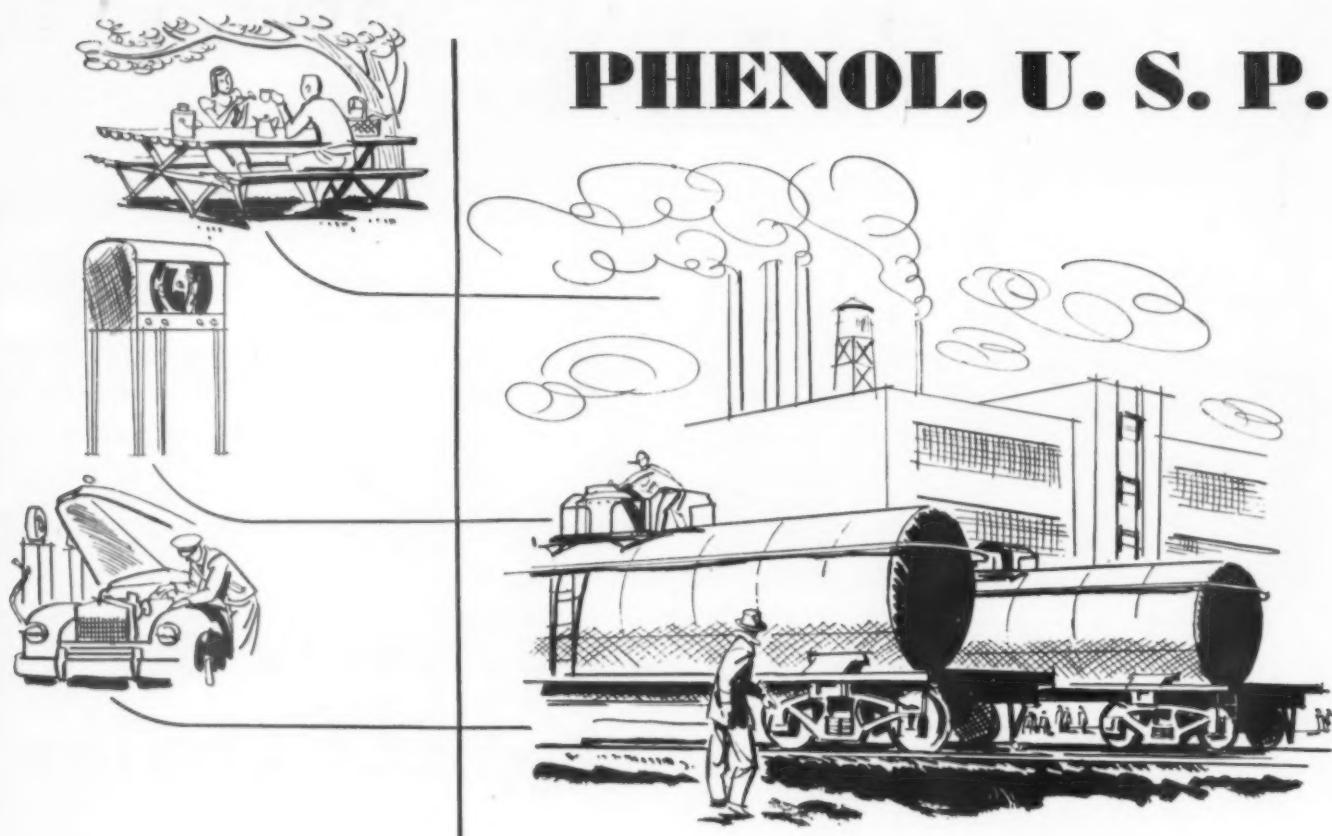
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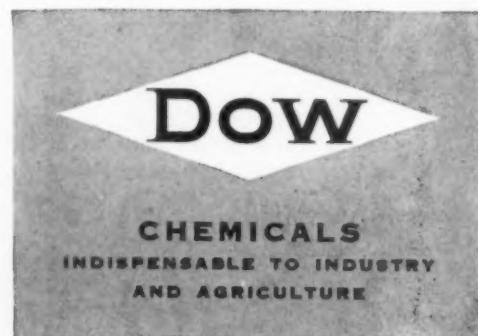
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PURCHASING PREVIEWS

A WASHINGTON REPORT FOR PURCHASING AGENTS

September 1, 1950

SHORTAGES AND PRICE PRESSURES IN PROSPECT

Rearmament pace, superimposed on an unprecedented civilian economy, will create material scarcities and stimulate price pressures far out of proportion to the actual tonnage of materials involved in the military production program.

Actually there are two military programs—the supply of the troops and ships involved in the war, and a longer range program of general rearmament based on the concept of creating a military force sufficiently powerful to police the world.

The first commitment—the actual war—can be measured in terms of specific tonnages of materials, equipment and supply. The scope of the war shapes the size of the demand. The immediate battle requirements establish the urgency of demand and set the pattern of priority in delivery.

Second commitment, that of policing the world, is more indefinite—and more extensive. Actually, such a commitment entails much more than enlargement of the Air Forces to 70 group strength, or the activation of additional divisions of ground troops, or the activation of a substantial tonnage of the mothball naval fleet and the merchant marine.

Pattern for policing the world has been to work with other nations, and these nations, whether they supply important fighting strength or mere token forces, are still in a position to call on the United States for both military and economic support.

ECONOMIC CONTROLS ANTICIPATED

Over-riding fact is that there is not only a general anticipation of controls, but a greater acceptance of the necessity for controls.

Public reaction against price increases develops quickly as food and clothing prices move up.

General thinking is that the price increases are speculative, especially as they take place before actual war scarcities or higher cost factors traceable to rearmament are reflected in the cost and distribution pattern.

The public reaction does not take into account that a fourth round of wage increases has taken place, and that these higher cost factors have been submerged through competitive sales efforts.

Before the emergency, it was generally thought that industry would absorb the higher wages and seek to compensate for them through improved productivity. The present policy is to pass these higher cost factors along to the consumer.

One reason for this policy is that in an economy geared to rearmament, productivity in civilian goods output tends to drop off, rather than to increase.

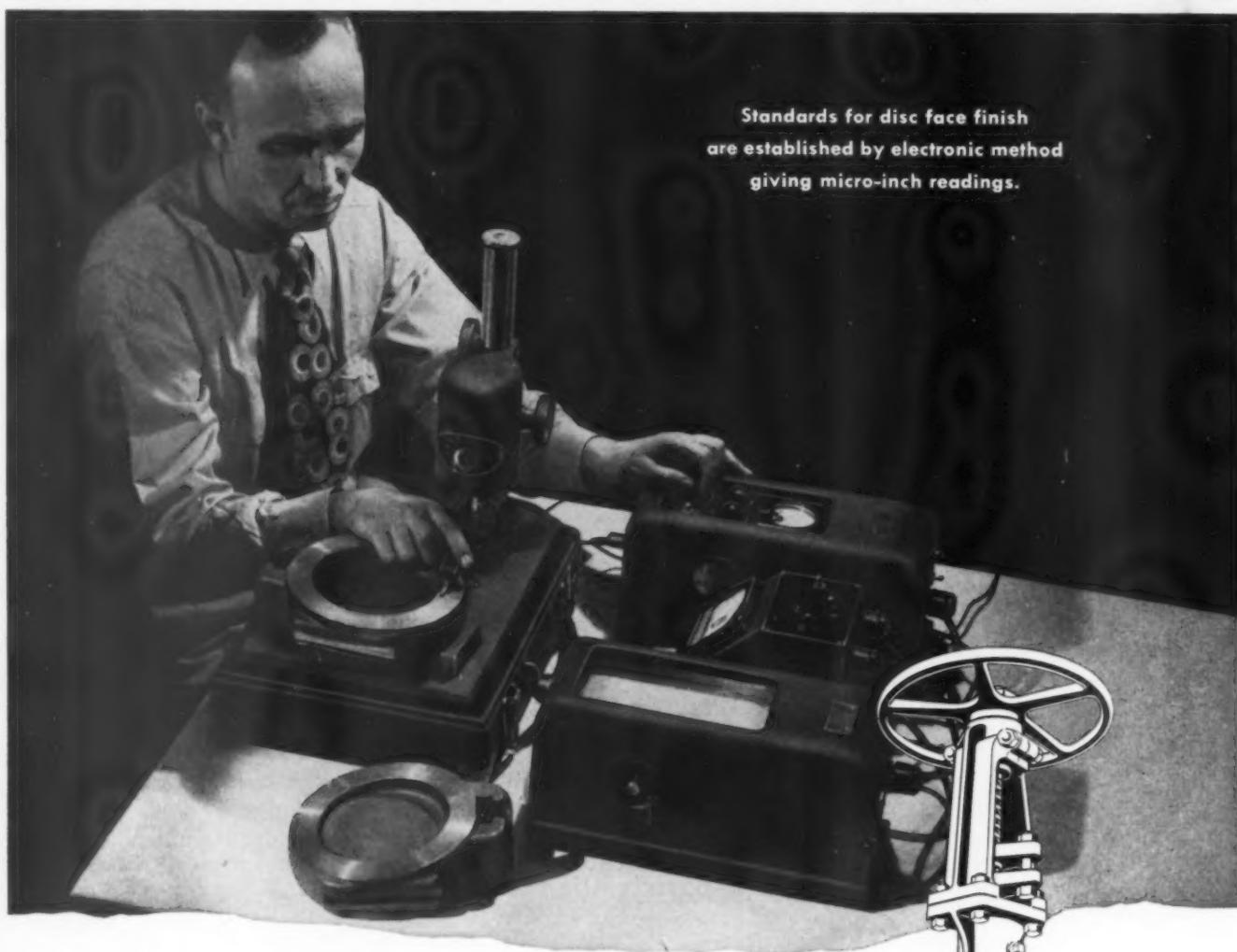
TIME-TABLE ON CONTROLS INDEFINITE

Speculation as to the need for a system of priorities in distribution of materials centers around the degree of urgency in procurement of military equipment.

It is generally accepted that complete mobilization will result in the quick development of a more rigid system of materials allocation than was in effect at the height of World War II.

This obviously does not mean that the first mobilization order will begin with the rigid allocations control effective in the full mobilization period of World War II, but it does mean that the transition period between simple priorities and a tight system of materials allocations will be shorter, and there will be fewer loopholes.

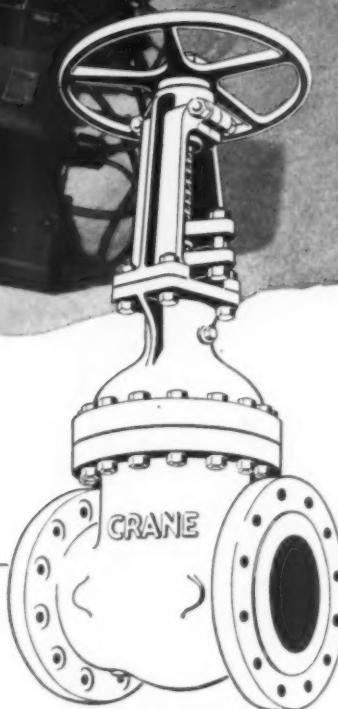
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EFFECTS OF PARTIAL MOBILIZATION

Short of a major war, it is the Government's view that a partial mobilization will create inflationary pressures and materials shortages, but not to a degree that warrants substantial price, priorities and manpower controls.

The Government approach is that a partial mobilization will require roughly 10% of the gross national production, and that by expanding productive facilities, the economy can take the mobilization program in stride.

General thinking is that the inflationary pressures will come primarily from the record high personal income levels, which have recently reflected in buying pressures for all types of goods.

Based on this general approach, the measures proposed for maintaining a balance in the economy are not substantially different than what was recommended by the President to curb the inflationary trend in 1948.

PATTERN ON MILITARY PROCUREMENTS

The partial mobilization measures do not materially alter the method of military purchases. Until there is a military force of many millions of men, the bulk of military purchase will be in terms of airplanes, tanks, vehicles and similar supplies.

This means that those producers who have been doing business with the military services will continue to produce for the major part of the new purchases.

The National Security Resources Board has surveyed roughly 15,000 plants and determined to what use these plants can best be put. Such plants have theoretically been assigned to manufacture specific types of armaments for a particular branch of the military service.

The largest part of military purchases required for a partial mobilization will be absorbed by these plants. Many of them make a practice of subcontracting extensively, and through subcontracting, a substantial number of additional plants will be brought into military production.

However, the partial mobilization plans do not envision a wide participation in war production. It is the military view that plants best suited to produce civilian goods should continue to do so within the limits of what materials are available.

It is highly unlikely that manufacturers who have not been producing for the military will be able to compete favorably in competitive bidding with producers who have had experience in military contracting and are tooled up to supply the military.

Similarly, it is not likely that the military procurement officials would be in the position of negotiating prime contracts with producers whose plants have not been surveyed.

MATERIALS STOCK-PILING TO BE ACCELERATED

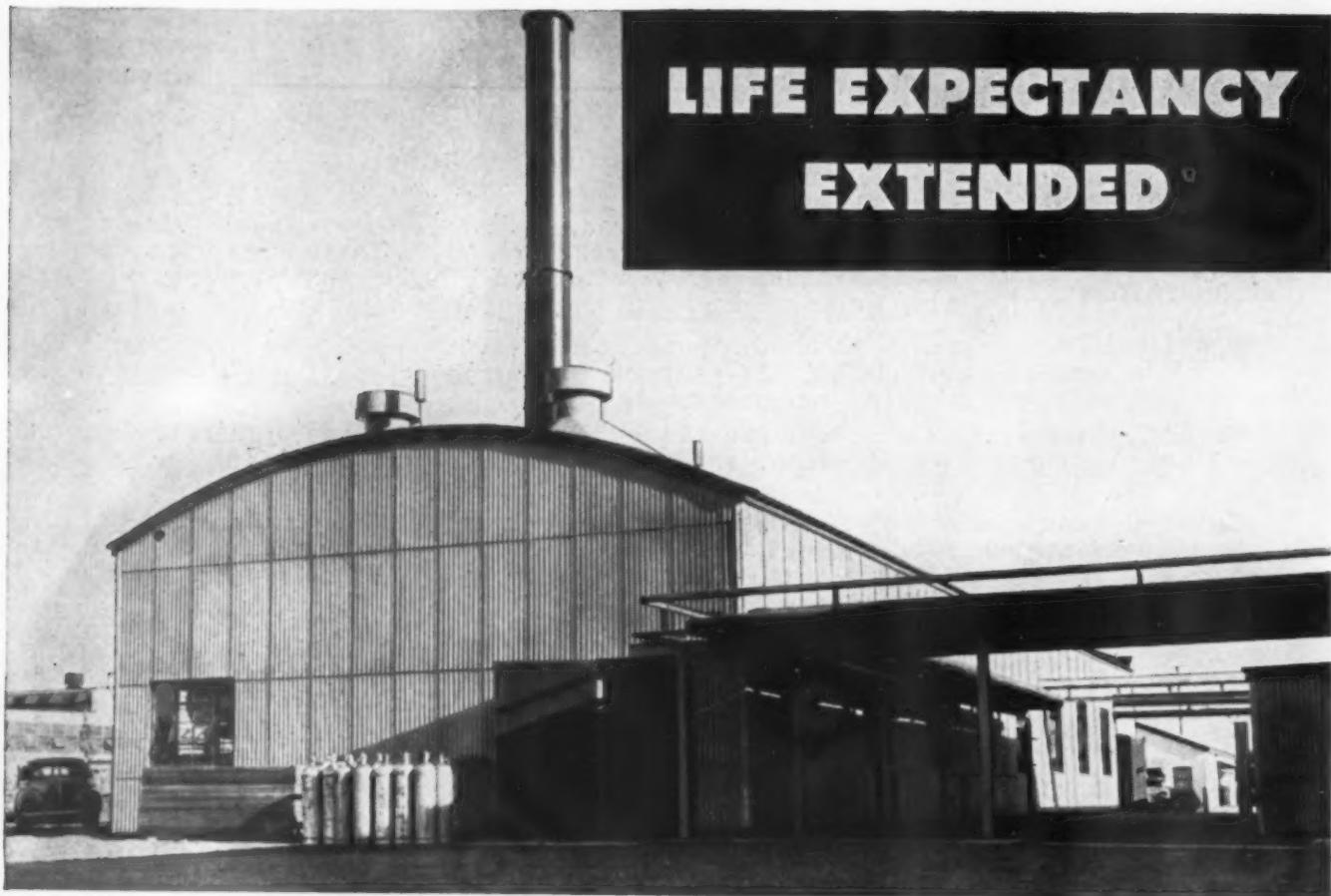
Procurement of strategic and critical materials for the stockpile during the fiscal year 1950 lagged somewhat behind the rate established during fiscal 1949.

This was due in part to the fact that heightened industrial activity in recent months left an insufficiency of many materials to meet stockpile quotas. In particular, stockpile schedules were not met in the major dollar-value items of rubber, copper and zinc. Also negotiations for the purchase of tin, another major dollar-value item, were not concluded until late in the fiscal year.

The current policy, however, will be for building up the strategic materials stockpile on schedule regardless of the impact on civilian purchases which, added to the actual requirements for military production, will create further shortages.

In addition to the deterrent created by civilian demand, accumulation of the stockpile was slowed by the reluctance of Congress to appropriate funds for materials purchase.

The current attitude in Congress is to provide funds for any activity connected with national defense, and the only issue is whether to meet the deficits through tax levies or borrowings.



by K&M "Century"
ASBESTOS CORRUGATED

Compressor Room of the Birds Eye-Snider Plant at Walla Walla, Washington, is sided with K&M "Century" Asbestos Corrugated Sheets.

The sturdy "clean build" of these compressor plant walls is one sign they'll live long. They're K&M "Century" Asbestos Corrugated, the material you see on more and more industrial and commercial buildings whose owners have made sure of lasting good looks and economy.

K&M Corrugated saves from the start by simplifying and speeding erection. Cutting, drilling, fitting and anchoring are easily done, with every assurance of trim, durable enclosure. What's more, K&M Asbestos Corrugated Sheets—*stay put*. They don't give in to weather effects and fire hazard, nor to rust, rot, rodents and termites. Thus long-term freedom from maintenance goes right along with the initial economy of using K&M "Century" Asbestos Corrugated for siding and for roofs, too.

Whatever your building plans, see how much this adaptable modern material can save you. Write us for full data and the name of your nearest K&M Distributor.

Even scaffolds and extra labor are eliminated when "TOP-SIDE"® fasteners are used. They are made for use with steel members of any type, on sides and roofs.

*® H. & B. Enterprise Corp.

Nature made Asbestos... Keasbey & Mattison has made it serve mankind since 1873

**KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA**





BUT MIGHTY IMPORTANT!

REAL whoppers in the job they do, these compact G-E thyratrons help control d-c motors, resistance welders, boilers, furnaces—a big share of your plant equipment.

Tough, dependable little tubes . . . but now and then one needs replacing. When this occurs, your G-E tube distributor's fast service—his complete stock of types and sizes—are vital aids to continued production. So check his phone number now!

Also . . . your distributor knows how to help you get top-level performance from the G-E tubes you install. And his replacements carry G.E.'s full, important tube warranty!

*Electronics Department,
General Electric Company,
Schenectady 5, N. Y.*

GL-502-A

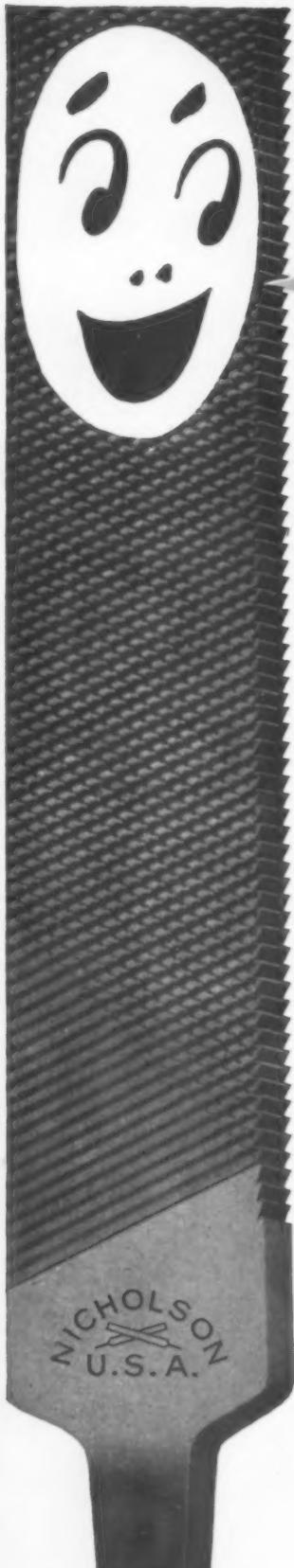
A C T U A L S I Z E



You can put your confidence in—

GENERAL  ELECTRIC

180-JA29



"Did I ever tell you about my 18 operations?"

"Eighteen! That's a lotta operations on any anatomy. But these were not the hospital kind. They're the basic manufacturing operations that have given Nicholson and Black Diamond files the reputation of being the toughest, bitingest, lastingest files made.

"But the agonies I went through to get that way! Even as a raw strip(ling) from the steel mill, Nicholson had a finger in my welfare—specifying the kind of stuff I had to have 'fore they'd consent to operate on me. At the warehouse they put the steths on me and my buddies. We hadda be right. Or else! Then to a clip joint where we were measured for size and our first knifing. Whammie! Everything went blank. I was a flat blank (no teeth).

"Checked against a model—a tattletale if I ever saw one—I hit the forging room. They turned on the heat—to soften me up. Notched me where my heel was to be. Fashioned one end of me into a tail (tang, they call it). More heat, and I'm rammed into a die for another 'do-or-die' operation. When I came out, *voilà!* I had myself a nice tapered point. Hurt? Me? You forget, sir, that I can take it.

"Now they tell a batch of us blanks we gotta be annealed—to tone us up so we can have our teeth knocked in. More torture. Some of us came out of the oven looking like we'd been on a bender. After being straightened out and cooled, a few of the fellas were eenie-meenie-minied to make the supreme sacrifice. A bone cracker broke 'em smack in half. With magnifiers the fractures were searched for bugs in the grain of the steel. Our batch got a clean bill. 'But you never can tell,' said the inspector.

"Next, off to the grinding and drawfiling rooms to get our backs, sides and bellies smoothed . . . so all our teeth would be of even height and their points sound and clean as a hound's tooth. Not a molecule of decarburization was to remain. Very fussy, those Nicholson folks. They'd remove a flyspeck if it indicated the slightest letdown in Nicholson quality.

"There's that model again. Check. Okay, and we're headed for the cutting room. Here come the slashers—murderous-look-

ing machines with ver-r-ry sharp chisels poised for the kill. This was *it*. I either make it or I don't. I was laid on a nice, soft zinc operating slab. In a few seconds it was all over. A thousand gashes—but I had a fine set of teeth. We lost a few of my buddies—because here at Nicholson only the fittest survive.

"I was a bit flabby from the annealing. They fixed that. Gave me a bath. Told me it was a mud bath, but it smelled like old ground-up bones. Another heat treatment—in red-hot lead; and another quick bath in a tub of cold water. I blew off some steam, but came out hard as nails. Another bath, and another (I was ready to scream). First a cleansing bath, then a lime-water.

"More. They took us unscathed patients to another operating room and sand-blasted the ugly film off our teeth. Boy, were they sharp and glistening! I thought I was ready to go places. But no, we gotta have another hot poultice—to take the brittleness out of our tangs. And another bath—in oil-and-water. Ugh! The oil was to protect us after an oven dried up the water.

"We hop a conveyor for the final tests. A prover gives us the cold steel—hard as aitch—to see if we can bite keenly and evenly. I gave him plenty of evidence! Then I was picked up and had my shoulder banged on a metal block to see if I was sound (no hidden fire cracks). I passed, was wrapped, boxed and ready to meet you through your industrial distributor. I'm a Nicholson Flat File that'll win your smile when you feel my bite and note my fine physical condition and long-lasting toughness.

A. Nicholson File

"P.S.—If you or any of your key men want to read more about files, write for 'FILE FILOSOPHY,' Nicholson's famous 48-page book jam-packed with interest. It's free—as many copies as you need. Address NICHOLSON FILE CO., 28 ACORN ST., PROVIDENCE 1, R.I. (In Canada, Port Hope, Ont.)"

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NICHOLSON

... A FILE FOR EVERY PURPOSE



—Modernize— YOUR CATALOG AND BULLETIN FILES

Bring Your Source Information Up-to-date on New and Improved Equipment, Products and Materials. This is the first of — FIVE Pages Listing the Latest Trade Literature! Check All Five — 19, 20, 22, 24, and 164! A special listing of catalogs and bulletins on office equipment and supplies will be found on page 164. Also, we will be glad to obtain information for you on any product advertised in this issue. See instructions below.

When Writing to Manufacturers Direct, Please Mention PURCHASING Magazine.

1. CORROSION - RESISTANT PAINT—Bulletin No. 712 presents facts about Tygon Paint, telling where and how to use it and where not to use it. The U. S. Stoneware Co., P. O. Box 350, Akron 9, Ohio.

2. BERYLLIUM COPPER—Technical Bulletin No. 1 provides factual information on beryllium copper, giving case history and technical information on Berylco 165 strip. The Beryllium Corp., Reading, Pa.

3. PHASE CONVERTER—Bulletin describes phase converter which makes possible the use of 3-phase 220 volt motors on single-phase 220 volt power lines. Converter maintains high efficiency while increasing the power factor. The Henry Electric Co., Saginaw, Mich.

4. BRONZES—New pamphlet tells about Herculoy Engineered Bronzes for general purposes and gear bronzes. These are copper-silicon alloys having many of the characteristics of high tin bronzes, yet they are completely free of tin. Federated Metals Divn., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.

5. CHEMICALS—"Products of Columbia," new 26-page booklet, contains concise outline of the wide range of chemical products for industry offered by the Columbia Chemical Divn., Pittsburgh Plate Glass Co., Fifth Ave. at Bellefield, Pittsburgh, Pa.

6. GRINDING WHEELS, Cylindrical Grinding—4-page catalog bulletin, ESA-191, describes grinding wheels for plain cylindrical grinding, includes grain and grade recommendations specifically for their class of work, popular wheel sizes and data on speeds and feeds. Simonds Abrasive Co., Tacony & Fraley Sts., Philadelphia, Pa.

7. PLASTICS—Technical details of styrene loaded glass mat, new thermoplastic structural material combining beauty and strength, recommended for housings for mechanical devices, decorative paneling, structural laminates, boxes and other contain-

ers, are described in bulletin issued by Plastics Divn., Monsanto Chemical Co., Springfield, Mass.

8. CAP SCREWS—New folder on flat head socket cap screws, giving price information and specifications, has been issued by the Bristol Co., Mill Supply Divn., Waterbury, Conn.

9. CONTRACT MANUFACTURING—Bulletin illustrates heavy duty metal contract products made by French & Hecht Divn., Kelsey-Hayes Wheel Co., Davenport, Ia., who offer complete wheel assemblies, sub-assemblies, stampings, machining, grey-iron castings, special rolled sections, and design and test services.

10. LIGHTING—Fixture hangars, accessories, special devices and parts are the subject of Catalog No. 50, 80 pages. It contains more than 247 photos and drawings, showing construction and operating features and typical installations. Accessories include shock absorbers, pulleys, suspension fittings, etc. Copy will be sent on letterhead request. Thompson Electric Co., 1101 Power Ave., Cleveland 14, Ohio.

11. SELF-TAPPING SCREWS—"The Short-Cut to assembly savings—Parker-Kalon self-tapping screws" is title of 48 page bulletin-catalog which describes screws in detail, tells where and how to use them in metal and plastics

(Please turn to page 20)

READER SERVICE

All listings include names and addresses of manufacturers.

However, each one is numbered. If you want to save Multiple-letter writing, just jot down the numbers of the items you want and month of issue, and list them in a letter on your COMPANY letterhead to

Reader Service Dept.
PURCHASING Magazine
205 E. 42nd St.,
New York 17, N. Y.

NOTE: This service also applies to New Products, Equipment and Supplies reported in the

New Products Section
Pages 128-160

(Continued from page 19)
assembly, and illustrates the various types along with information on hole sizes, application data, etc. Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.

12. WOVEN WIRE SLINGS — New price list gives complete specifications for woven wire slings, which are available in standard widths from 3" to 30" and from 36" to 132" standard lengths. The Cambridge Wire Cloth Co., Cambridge, Md.

13. PACKAGING — "BLUE Book of Packaging", detailing shipping reinforcement from A to Z by means of round steel strapping, 24 pages, contains 150 illustrations of modern shipping applications from parcel post cartons to palletizing and carload stowage. Gerrard Steel Strapping Co., 2915 West 47th St., Chicago 32, Ill.

14. FLEXIBLE AIR DUCT — Bulletin describes flexible air duct for removal of fumes, dust, shavings, grindings, lint, etc. Extremely flexible, 90° and 180° turns being easily made with minimum flow restriction. Easily installed. The Wiremold Co., Hartford 10, Conn.

15. HEATING ELEMENTS — 16-page catalog describes electric industrial heating elements and units. It lists voltages, wattages, temperature ranges, dimensions, prices, as well as application information. Tuttle & Kift Inc., 1827 N. Monitor Ave., Chicago 39, Ill.

16. AUTOMATIC LATHE — Full-automatic lathe, Model C, 1 1/4" x 18" is described in circular No. 492. Unit designed for accurate production of parts from any turnable material utilizing either high speed steel or carbide cutting tools. The machine is said to provide economies comparable to those obtained on chucked work machines in various types of machines. Pratt & Whitney, West Hartford 1, Conn.

17. HOSE COUPLINGS, FITTINGS — 12 page catalog section covers hose couplings and fittings, illustrating and giving specifications, pressure recommendations and a description of threads. B. F. Goodrich Co., Akron, Ohio.

18. SINTERING FURNACES — Bulletin 230, 8 pages, illustrates

LATEST TRADE LITERATURE

(This is Page 20)

Check Over All Five Pages!
19, 20, 22, 24 and 164

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This service also applies to numbered news items in New Products Section, Pages 128-160.

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and describes complete line of sintering furnaces—hand pusher batch type, mesh belt, mechanical pusher, and roller hearth furnaces. Lindberg Engineering Co., 2444 W. Hubbard St., Chicago, Ill.

19. DIES — Hercules retainers, interchangeable punches and die buttons are detailed in catalog No. 103. New type of improved die buttons is illustrated. Section of the catalog illustrates applications of die system built for number of stamping plants. Lower die building costs, quicker setups, reduced downtime for die repairs, lower die maintenance cost, and increased production are among advantages claimed. Whitman & Barnes, Plymouth, Mich.

20. FOUNDRY MULLOR — 36-page catalog gives complete information on foundry sand mulling, and illustrates six models of Speedmullors, with complete specifications. Beardsley & Piper, 2424 No. Cicero Ave., Chicago 39, Ill.

21. TRUCK CASTERS — Catalog K-38 (plus Caster Selector) illustrates and gives full information including dimensions, prices and codes for Bond truck casters and wheels. Bond Foundry & Machine Co., Manheim, Pa.

22. HYSOL 6800 — This is new thermosetting plastic material for use in electrical and chemical fields. It is odorless, tasteless and non-toxic. It is available in variety of rod, tube and sheet sizes. As a casting resin it offers unusual adhesion to metals, glass, ceramics, etc. It has high chemical and elec-

trical resistance, and will withstand temperatures up to 230° continuously. Bulletin 601 gives full information. Houghton Laboratories, Olean, N. Y.

23. STUD WELDING — Reprint of "Stud Welding" chapter from new edition of Welding Handbook, is available from Nelson Stud Welding, Divn. of Morton Gregory Corp., Lorain, O.

24. CAST TO SHAPE STEELS — "Jessop Cast-to-Shape Steels" is the title of a revised catalog which illustrates and describes castings made from tool steels, stainless steels and heat resisting steels. Jessop Steel Co., Washington, Pa.

25. PIPE FITTINGS — Bulletin 104 describes complete line of cast iron, malleable and bronze fittings, and recent additions of cast-iron, screwed, flanged, sprinkler and extra heavy malleable fittings. Kennedy Valve Mfg. Co., Elmira, N. Y.

26. ELECTRODES — 56-page catalog describes Eureka tool and die welding electrodes and gives complete data on metallic arc tool steel welding. Welding Equipment & Supply Co., 223 Leib St., Detroit 7, Mich.

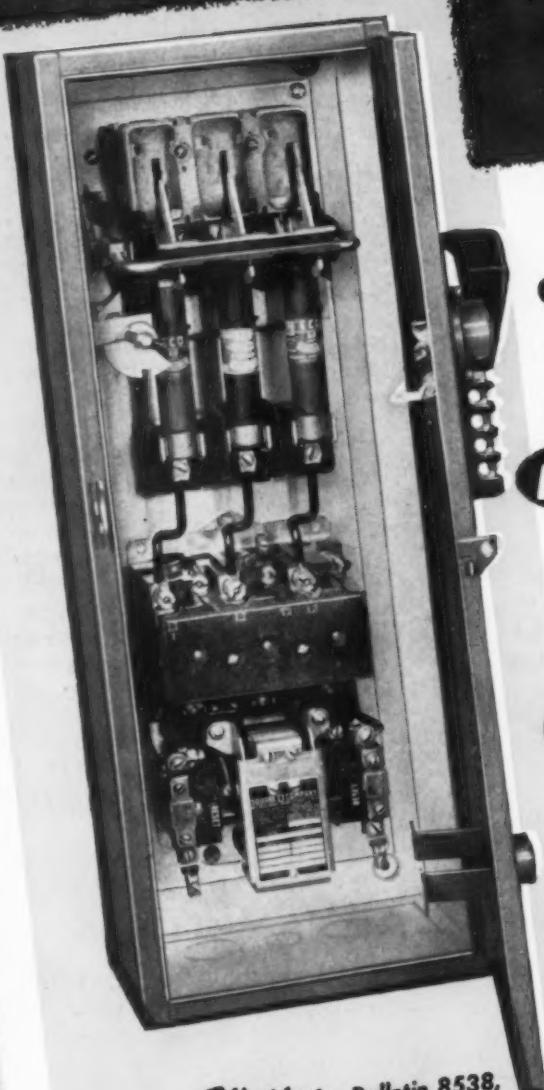
27. UNIONS, VALVES — Catalog No. 11 illustrates hot forged steel unions and valves, and includes complete data, specifications, and prices. It also includes complete information on double union full opening swing check valve. Catawissa Valve & Fittings Co., Catawissa, Pa.

28. SAFETY MASK — Demand mask for 30 minute respiratory protection in toxic or oxygen deficient atmospheres, is described in new 4-page bulletin B-20. Wearer is provided with full half-hour of oxygen or pure compressed air automatically according to breathing needs. Masks may be equipped with speaking diaphragm which permits unrestricted verbal communication and use of telephones. Mine Safety Appliance Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.

29. ROLL SHEET CUTTERS — Automatic roll sheet cutters are described and illustrated in new 16-page catalog. Model CSH cuts,

(Please turn to page 22)

DESIGN LEADERSHIP



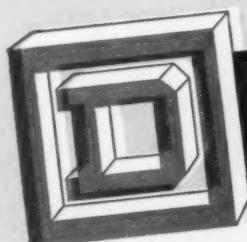
Write for Bulletin 8538,
SQUARE D COMPANY, 4041 North
Richards Street, Milwaukee 12, Wis.

THIS NEW SQUARE D
COMBINATION STARTER (SWITCH TYPE)
offers Greater Operator Safety
and Longer Motor Starter Life

NEW Switch Operating Mechanism provides maximum operator safety. Interlock prevents opening door when disconnect is on. When door is re-closed, self-aligning handle indicates true position of disconnect. Operating handle can be locked on or off with one, two, three or four padlocks of varying sizes. Handle-locking mechanism also locks door.

NEW Switch Design has quick make and quick break action—no dead center—visible blades for easy checking—magnetic arc plate for high rupturing capacity—dead-front line terminals, protected by hinged arc chamber cover—positive pressure jaws and fuse clips—non-tracking insulation.

NEW Features in Magnetic Starter Design Square D's time-proven design has always provided easy installation, simple maintenance, and long life. Now, even longer life is assured by straight line, guided motion of armature and movable contact assembly which eliminates bearing and reduces wear. For added convenience and flexibility, Square D starters now have NEMA standard mounting and wiring.



SQUARE D COMPANY

DETROIT

MILWAUKEE

LOS ANGELES

SQUARE D COMPANY CANADA LTD., TORONTO • SQUARE D de MEXICO, S.A., MEXICO CITY, D.F.

(Continued from page 20)

counts and stacks in a neat pile. Two major accessories are electric eye cut register control and automatic piler. Charles Beck Machine Corp., 13th St. above Callowhill, Philadelphia 8, Pa.

30. VISES, Etc.—Catalog 101E describes line of vises, "C" clamps, work positioners, woodworkers' vises, hinged pipe vises, drill press vises, machine vises, etc. Wilton Tool Manufacturing Co., 925 Wrightwood Ave., Chicago 14, Ill.

31. DRILLHEADS — 20-page brochure gives complete information on design and construction of Thriftmaster multi-spindle drillheads, and describes over 50 standard models. Thriftmaster Products Corp., 1026 N. Plum St., Lancaster, Pa.

32. REPAIR CEMENTS — Bulletin C-8 describes use of corrosion resisting cements to repair cracked, corroded and broken pipe, pumps, valves and other mechanical equipment in corrosive service. Repairable equipment can be of steel, iron and other metals, hard rubber, glass, porcelain, carbon, stoneware, wood or plastic. The resin cements are resistant to practically all acids, solvents and alkalis up to temperatures of 325° F. When set, cements can be machined if necessary. The Carboline Co., 7603 Forsyth Blvd., St. Louis 5, Mo.

33. AIR TRAPS — Bulletin describes and illustrates various air trap models, and their applications. Physical data and list prices are included. Armstrong Machine Works, Three Rivers, Mich.

34. LIQUID GAGE — The king gage, a precision instrument for commercial use in determining level, volume or weight of liquid in any type of tank, vat or container, is described in bulletin issued by the King Engineering Corp., Box 300, Ann Arbor, Mich.

35. MOTORS — Bulletin C-2001 covers d-c motors from $\frac{3}{4}$ to 1000 hp., and gives design, construction, selection and ordering information, together with frame dimensions for Type "T" heavy duty, constant and adjustable speed motors. Motors are available in drip-proof, splash-proof, totally enclosed, explosion-proof,

LATEST TRADE LITERATURE

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blower ventilated, and gearmotor construction. Reliance Electric & Engineering Co., 1088 Ivanhoe Road, Cleveland 10, O.

36. MAINTENANCE — Catalog 550 itemizes babitted journal boxes, roller bearing pillow blocks, centrifugal slurry pumps, water valves, conveyor takeups, roller holdbacks, perforated steel screen plates, etc. McNally Pittsburgh Mfg. Corp., Pittsburgh, Kansas.

37. CIRCUIT BREAKERS — Stablok circuit breaker system is subject of illustrated and detailed bulletin of 28 pages, which describes it as "simplest, safest circuit breaker system ever built." Federal Electric Products Co., 50 Paris St., Newark, N. J.

38. FIREDOR — Brochure describes wood-faced fireproof door which has a fire rating for Class B and C openings from Underwriters Laboratories. Feature of door is Kaylo core which does not burn and which is rot and vermin-proof. Kaylo Divn., Owens-Illinois Glass Co., Toledo 1, Ohio.

39. ALUMINUM FABRICATION — 12-page illustrated bulletin describes facilities of Welding Engineers, Inc., Norristown, Pa., for the design and fabrication of aluminum. Technical data on the physical and chemical properties of aluminum for pressure vessels is included. Illustrations show fabrications welded by the inert gas shielded arc process which produces sound welds without the use of flux.

40. GEARS — Boston Gear Catalog No. 55 just off the press lists over 100 product groups including spur, miter, bevel and worm gears, roller chain, sprockets, ball bearings, couplings and pulleys—over 4,500 stock items. New items include porous bronze bearings, universal joints, pillow blocks and flanged cartridges, and new model speed reducers with selection charts. Boston Gear Works, 74 Hayward St., Quincy 71, Mass.

41. FLOOR CARE — 32 page booklet entitled Proper Care of Floors, has been issued by West Disinfecting Co., 42-16 West St., Long Island City 1, N. Y.

42. MOTOR CONTROLS — Two booklets on Controls—"Simplified Guide to the Selection and Application of Commonly Used Types of A-C Motor Controls" and "The Biggest Control Story in Years", will be sent to you by Graybar Electric Co., Graybar Bldg., New York 17, N. Y.

43. OIL CUPS — Oil cup price guide catalog is available from Gits Bros. Mfg. Co., 1865 Kilbourn Ave., Chicago 23, Ill.

44. GAS REGULATION — Airco Regulator catalog gives understandable information on the function and operating characteristics of regulators for welding, cutting, heating, etc., on cylinders, manifolds and pipe lines, for all types of compressed gases, dual stage regulation, etc. Air Reduction, 60 E. 42nd St., New York, N. Y.

45. PLUMBING, HEATING Maintenance — Catalog of 112 pages lists over 2300 triple wear replacement parts and patented precision tools. J. A. Sexauer Mfg. Co., 2503 Third Ave., Dept AP 80, New York, N. Y.

46. PROTECTIVE CLOTHING — Illustrated catalog and price list covers Neoprene protective clothing which is available in a complete range of sizes in black or yellow, and Hycar protective aprons. The H. M. Sawyer & Son Co., Cambridge, Mass.

47. BELT LACING — Bulletin A-60 describes Alligator conveyor belt lacing which is available in 12 sizes for belts from $1/16$ " to $5/8$ " thick—any width. Flexible Steel Lacing Co., 4697 Lexington St., Chicago 44, Ill.

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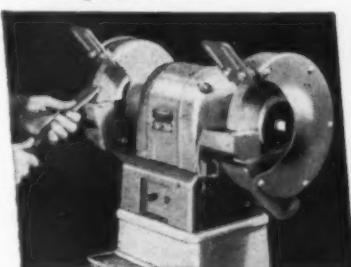
OVER 100

WAYS TO CUT COSTS in Production, Repair, Construction



25

B&D ELECTRIC DRILLS are available in capacities from $\frac{1}{4}$ " to $1\frac{1}{4}$ " in steel, double in hardwood. Drive twist drills, wood augers, hole saws.



4

B&D BENCH GRINDERS speed tool sharpening, grinding, wire brushing, buffing, etc. 6" to 10" wheel diameters. Adjustable tool rests.



25

B&D SCREW DRIVERS drive anything from delicate screws to nuts and bolts up to 1" diameter. Positive and adjustable clutches, 90° Angle Head models.



4

B&D ELECTRIC HAMMERS drive star drills, bull points, chisels; for drilling, channeling, demolition, chipping, scaling; in concrete, stone, brick, metal, wood, etc.



4

B&D PORTABLE GRINDERS bring the tool to the work for speedy grinding, wire brushing, buffing, 3" to 6" wheel diameters.



1

B&D $\frac{1}{2}$ " ELECTRIC IMPACT WRENCH hammers loose the most stubborn, rusted fastening. Drives nuts, bolts, studs tight. $\frac{1}{2}$ " square drive shank. No twisting, turning!



3

B&D ELECTRIC "QUICK-SAWS" are ten times faster than hand sawing. Rip or crosscut; cut angles, grooves. Models for cutting to max. depths of $2\frac{3}{8}$ ", $2\frac{3}{8}$ ", $3\frac{1}{8}$ ".

Per MAN

B&D Electric Tools are perfectly balanced, weight-saving, easy to control. Help mechanics work faster, with less fatigue; do more accurate work with less "rejects;" to cut your labor costs on any job!

Per HOUR

Famous B&D-built motors give these tools an unfailing source of power for uninterrupted production. Result: more work, per hour, *every* hour!

Per TOOL

Black & Decker Tools are built to last, give you extra years of service that cut your tooling costs. Housings are huskier. Parts are extra tough. Quality construction throughout.

For expert help in CUTTING COSTS...

Let your nearby B&D Distributor make an experienced survey of your shop to show you where you can save money. Phone him today!

WRITE TODAY for free catalog to:
The Black & Decker Mfg. Co., 664
Pennsylvania Ave., Towson 4, Md.

**In addition to the Tools pictured
THE WORLD'S MOST COMPLETE
LINE includes:**

- 5 Drill Stands • 2 Tappers • 3 Electric Shears
- 5 Die Grinders • 3 Polishers • 1 Saw Arm
- 1 Glue Pot • 1 Industrial Vacuum Cleaner
- 8 Valve Shops • 3 Valve Seat Grinders
- 1 Valve & Tool Grinder
- ... and Hundreds of Tool Accessories

*Trade Mark Reg. U. S. Pat. Off.



LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker PORTABLE ELECTRIC TOOLS

(Continued from page 22)

48. PACKING—Navalon Packing, a long lasting packing made of ramie fibre, featuring high tensile strength and rot-resistance, and also unique lubricating properties, is subject of folder PK-32A. It gives exceptional service in cold liquid service. Johns-Manville, Box 290, New York 16, N. Y.

49. DOUGLAS FIR—Illustrated 52-page book detailing Douglas fir, its qualities, and uses, is available from the Western Pine Assn., Yeon Bldg., Portland 4, Ore.

50. MOTORS—Bulletin SL-300-5 details Crocker-Wheeler explosion-proof motors. Elliott Company, Jeanette, Pa.

51. PIPE HANGERS—Adjustable pipe hangers and supports for every piping requirement are subject of illustrated Hanger catalog 10-D. Grinnell Co., Inc., Providence, R. I.

52. ELECTRICAL CONNECTORS—“Wide Range Connectors for Better Electrical Installations” is subject of folder issued by National Electric Products Corp., 1351 Chamber of Commerce Bldg., Pittsburgh, Pa.

53. FLEXIBLE BUSWAY—Bulletin TEB-4 describes Flex-A-Power prefabricated busway for 225-1000 amps, 600 volt secondary feeder systems. Easy to install, it provides power wherever you put a machine, and helps to cut maintenance costs. Comes in standardized parts ready for installation. The Trumbull Electric Mfg. Co., Plainville, Conn.

54. TRUCK CASTERS—Catalog K-38 describes Bond structural steel truck casters, ball race, rigid—available with plain or roller bearing wheels of semi-steel, solid rubber and vulcanized rubber tread—thread guard types also available. Bond Foundry & Machine Co., Manheim, Pa.

55. RIVETS—Price list covering tubular and split rivets available in all metals for industrial needs will be sent to you by the American Rivet Co., 849 N. Kedzie Ave., Chicago, Ill.

56. LOCATING METAL FLAWS—Printed matter describes the Dy-Chek method of inspecting metal, which makes it possible to

LATEST TRADE LITERATURE

(This is Page 24)

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quickly inspect any metal for flaws or discontinuities having surface openings. System involves easy use of three liquids and simple equipment for application such as brushes, sprays or dip tanks. Can be used for receiving inspection, manufacturing inspection, and preventive maintenance. Dy-Chek Company, 1503 E. Broadway, Hawthorne, Calif.

57. SEALING TAPE—Sample roll of Red Streak sealing tape which seals tightly and reinforces as it seals, will be sent to you by The Brown-Bridge Mills, Inc., Dept. P-508, Troy, Ohio.

58. SPRINGS—“Springs and Formed Wires” is title of informative booklet S-500 issued by Wickwire Spencer Steel Divn., CFIC, 2 New Bond St., Worcester 6, Mass.

59. SPRINGS—Copy of “Accurate Handbook of Technical Data on Springs” is available from Accurate Spring Mfg. Co., 3825 W. Lake St., Chicago 24, Ill.

60. CASTERS—Manual on casters and maximum floor protection, is offered by Darnell Corp. Ltd. Long Beach, Calif.; 60 Walker St., New York; 36 N. Clinton St., Chicago.

61. POWER CABLE—52-page manual tells about the advantages of Okolite-Okoprene Self-Supporting Aerial Cables for outdoor or indoor installations. Copy available on letterhead request. Okonite Co., Passaic, N. J.

62. SLIMLINE LAMPS—How slimline fluorescent lighting improves plant lighting and plant

production is explained in booklet “Modernize with G-E Slimline”. Copy will be furnished by General Electric, Nela Park, Cleveland 12, Ohio.

63. OPEN STEEL FLOORING—Bulletin KH1140 describes Tri-Lok rectangular open steel flooring made by the Dravo Corporation, Dravo Building, Pittsburgh 22, Pa.

64. FASTENERS—Mac-it hollow set screws, square head set screws, hollow pipe plugs, socket screw keys, stripper bolts, socket head cap screws, and many others are covered by Mac-it catalog. Strong, Carlisle & Hammond Co., Cleveland 13, Ohio.

65. CHEMICAL CONSTRUCTION Materials—Bulletin MCC No. 1 briefly describes complete line of chemical construction materials, including: corrosion-proof linings, corrosion-proof cements, acid-proof brick and tile, corrosion-proof brick sheathings, corrosion-proof protective coatings and corrosion-proof floors. Atlas Mineral Products Co., 42 Walnut St., Mertztown, Pa.

66. BRIDGE RAMPS—Bulletin illustrates and describes magnesium ramps and heavy duty steel ramps. Former may be used for loads up to 10,000 pounds, and the steel ramps are for loads up to 15,000 pounds. Penco Engineering Co., 725 Second St., San Francisco 7, Calif.

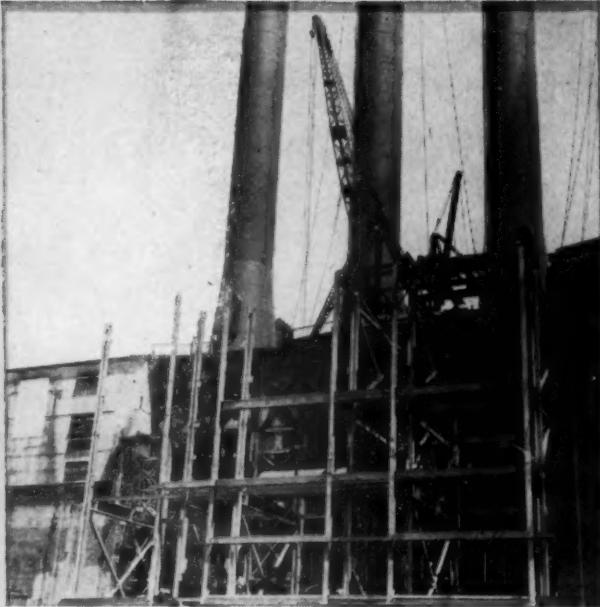
67. CENTRIFUGAL PUMPS—Monobloc centrifugal pumps, single and two stage, size 1 to 5, are the subject of bulletin W-306-B1. Pumps are designed for small boiler feed, cooling service and condensate service as well as circulation systems and drinking water supply. Bulletin includes specifications, motor data and materials for construction. Worthington Pump and Machinery Corp., Harrison, N. J.

68. PLATING ANODES—12-page booklet on anodes for the plating trade lists anodes in full detail as to size of body, length of hooks, and other data. Drawings show shape and dimensions of the various forms in which anodes are available. Federated Metals Divn., American Smelting and Refining Co., 120 Broadway, New York, N. Y.

(Please turn to page 164)



Lifting 15-ton blocks of Berea sandstone at the world's largest and deepest sandstone quarry, South Amherst, Ohio. This service is extremely abrasive as the stone is the same type that is used for grinding wheels. The Cleveland Quarries Company has used Tiger Brand Wire Rope on this operation for many years and reports exceptionally good service.



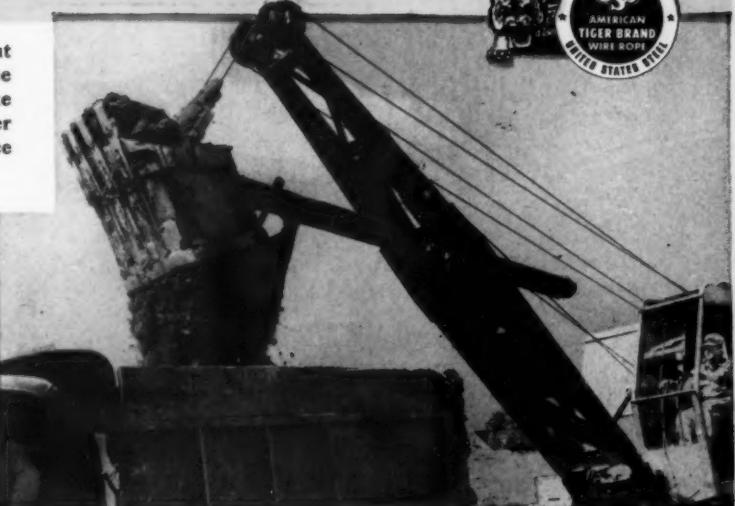
Building a power plant—Wire rope is the connecting link between steel on the ground and steelwork rapidly rising in a new power plant . . . and the longer the rope lasts without time-consuming changes, the more money it makes for the contractor. That's why it pays you to use the best wire rope you can get—TIGER BRAND.

Judge it by the jobs it handles

TIGER BRAND WIRE ROPE

Digging dirt—the commonest of all operations—but tough, too, because the wire rope is never free from grit. Whether you operate a small shovel like this or the biggest dragline, you'll find a Tiger Brand Wire Rope designed to give the best service in each application.

Outstanding performance month after month in jobs like this proves the superior quality of Tiger Brand Wire Rope. But if you have a special application that's tough on wire rope, call in a Tiger Brand Field Service Engineer. He'll help you select the best rope for your particular needs. In the meantime write for our handbook, "American Tiger Brand Wire Rope."



AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO • TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
COLUMBIA STEEL COMPANY, SAN FRANCISCO • UNITED STATES STEEL EXPORT COMPANY, NEW YORK



AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

"We Stopped Blows due to excessive Heating in a 600 Ampere Switch..."

..BY CHANGING TO FUSETRON
DUAL-ELEMENT FUSES"

... says W. R. Bishop
Eureka, California

HERE ARE THE FACTS-

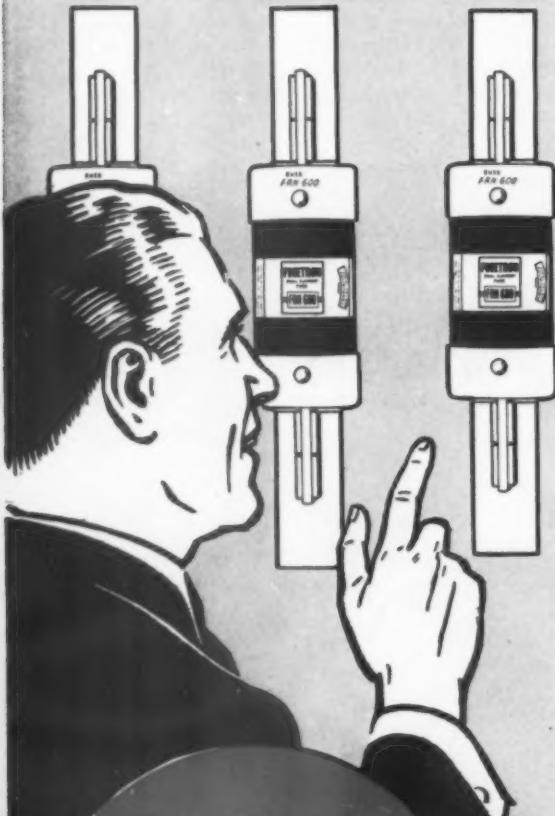
"A 600 Ampere 220 volt switch in one of our local schools was causing us a lot of worry. The fuses were running so hot that they were blowing on an average of every 3 or 4 days.

"A salesman told us about the lower resistance of Fusetron dual-element fuses, so we thought we would try them.

"That was more than six weeks ago and not one of the 600 ampere Fusetron fuses has blown. We have checked the switch and find that it is operating at a normal temperature."

W. R. Bishop, Owner

Eureka Wiring Service
Eureka, California



FUSETRON

TRUSTWORTHY NAMES IN
ELECTRICAL PROTECTION

BUSS

You get 10 Point Protection by changing to Fusetron Fuses

- 1 * Protect against short-circuits.
- 2 Protect against needless blows caused by harmless overloads.
- 3 Protect against needless blows caused by excessive heating — lesser resistance results in much cooler operation.
- 4 Provide thermal protection — for panels and switches against damage from heating due to poor contact.
- 5 Protect motors against burnout from overloading.
- 6 Protect motors against burnout due to single phasing.
- 7 Give DOUBLE burnout protection to large motors — without extra cost.
- 8 Make protection of small motors simple and inexpensive.
- 9 Protect against waste of space and money — permit use of proper size switches and panels.
- 10 Protect coils, transformers and solenoids against burnout.

* Fusetron Fuses have high interrupting capacity as shown by tests of the Electrical Testing Laboratories of New York City in December 1947.

Here's Why You Get This All-Purpose Protection

The fuse link element opens on short-circuit — the thermal cutout element protects on overloads — the result, a fuse with tremendous time-lag and much less electrical resistance.

They have the same degree of Underwriters' Laboratories approval for both motor-running and circuit protection as the most expensive devices made.

Made to the same dimensions as ordinary fuses — fit all standard fuse holders.

Obtainable in all sizes from $\frac{1}{10}$ to 600 ampere, both 250 and 600 volt types. Also in plug types for 125 volt circuits.

There cost is surprisingly low.

(FUSETRON is a trademark of the Bussmann Mfg. Co., Division of McGraw Electric Co.)



*Don't
Risk Losses!*

One needless shutdown . . .

One lost motor . . .

One destroyed switch or panel . . .

One burned out solenoid . . .

May cost you far more than replacing every ordinary fuse with a Fusetron dual-element Fuse.

MAIL THE COUPON NOW

Bussmann Mfg. Co., University at Jefferson St. Louis 7, Mo. (Division McGraw Electric Co.)
Please send me complete facts about FUSETRON dual-element Fuses.

Name _____

Title _____

Company _____

Address _____

City & Zone _____ State _____ Zip _____

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OF X-RAY FILM**



To insure the perfection of fine X-Rays, nearly every film manufacturer folds this special Riegel paper around the sensitive films in each package. No less than eleven technical properties must be combined in a single sheet—to guard against difficulties such as scratching, static electricity and chemical or photographic reaction. It's another interesting example of Riegel's ability to make paper for almost any need.

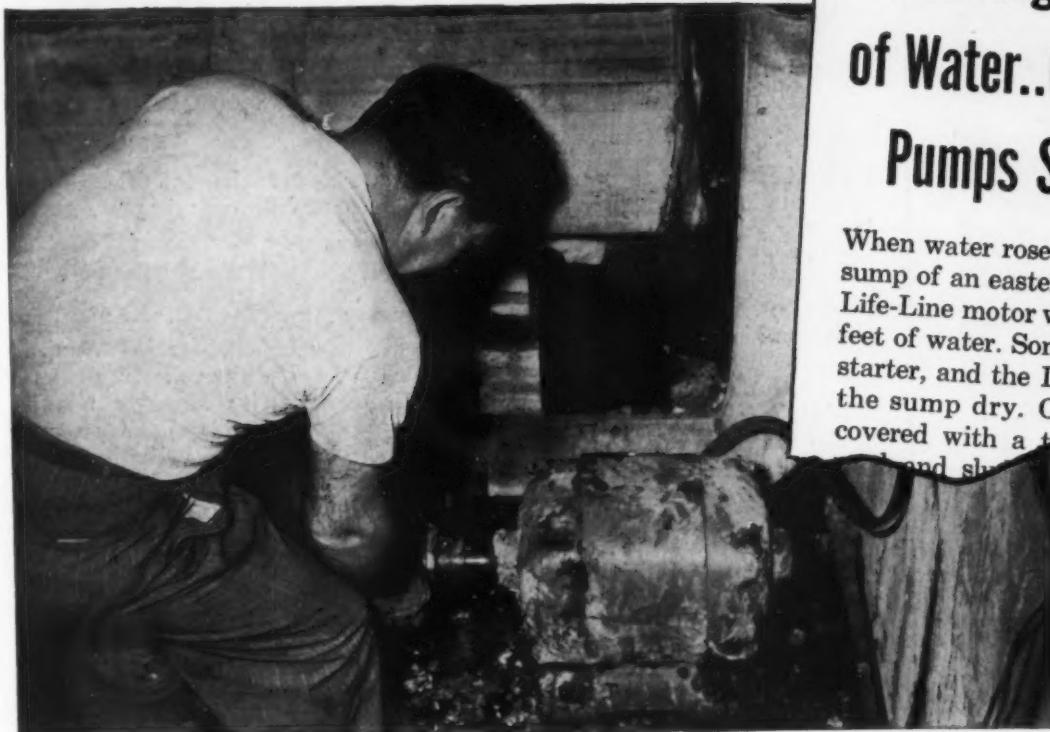
We now produce over 600 grades, many with technical properties that would surprise you. Perhaps one of these Riegel papers can help you. Just tell us what you are looking for, or send us a sample. If we can't make it, we will gladly tell you who can.

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**YOU CAN BE SURE... IF IT'S
Westinghouse**



Submerged in 6 ft. of Water... Open Motor Pumps Sump Dry

When water rose accidentally in a sump of an eastern plant, an open Life-Line motor was covered by six feet of water. Someone pressed the starter, and the Life-Line pumped the sump dry. Outside of being covered with a thick coating of mud and silt.

Can your PUMPS use this Life-Line motor stamina?

We certainly do not recommend open motors be operated under these conditions—in fact, we say DON'T DO IT! But this actual example illustrates the real stamina built into Life-Line motors—stamina resulting from improved materials and manufacturing methods.

Take the stator, for example. Coils are wound of Tufvar wire—wire you can pound with a sledge, tie into knots, without disturbing the insulation. Pear-shaped slots enable coils to be slipped into place without forcing. A fiber wedge closes top of slot, seals against dirt and moisture. Multiple dips and bakes in Thermo-set varnish give the stator a tough flexible film, resistant to oil, moisture, acid and alkali. That's

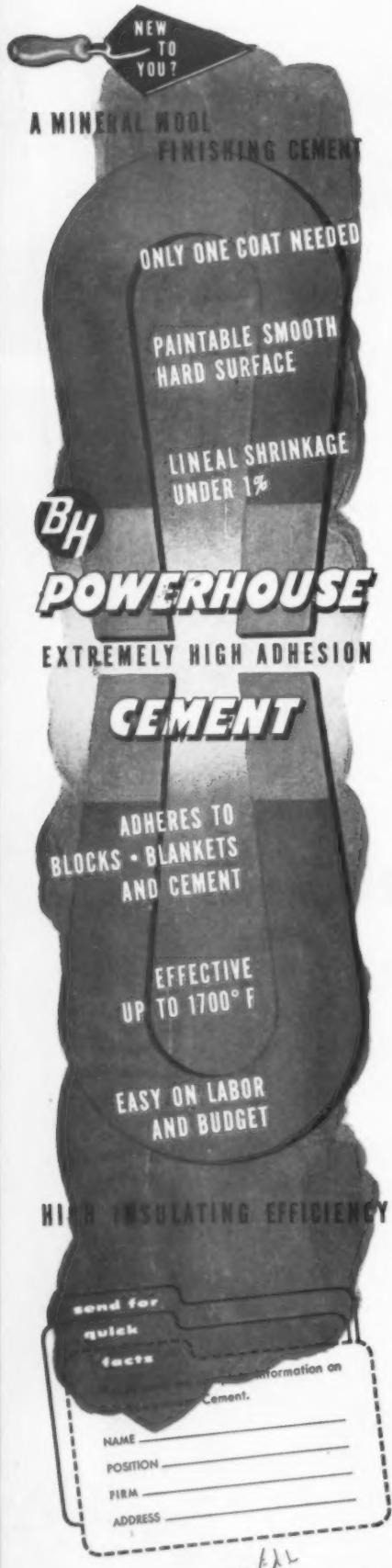
why, in the above example, there was no winding short-out—even under water.

It costs no more to get this extra motor stamina. Simply specify Life-Line as the drive for your equipment. Ask your local Westinghouse representative for details and a copy of booklet B-3842, or write Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pa.

J-21573

— If you figure LIFE-COSTS... you'll figure LIFE-LINE —





BALDWIN-HILL COMPANY
407 BREUNIG AVE., TRENTON 2, NEW JERSEY

F.O.B. *filosofy of buying*

PURCHASING agents have a reputation for toughness in their handling of salesmen, but we have yet to hear of one quite as tough as the New England farmer who is reported to have posted the following notice on his front gate:

WARNING!

We shoot every tenth peddler who calls at this house. The ninth one has just left.

A CORRESPONDENT in Philadelphia reports a sign on display in the lobby of the Stetson Company, world famous milliners to men and originators of the quaint practice of measuring head size by the gallon. Their greeting:

"Notice to Hatless Salesmen:
It will be to your interest to
wear a hat while visiting our
plant. We are proud of our
product, too!"

THE office statistician calls our attention to the fact that—if we count George Aljian's *alter ego*, the dummy in the picture frame on our August cover photo of the N.A.P.A. Marionettes, as a personal appearance—George now has the very unusual distinction of having been a PURCHASING "cover boy" on four separate occasions. He first earned the distinction as San Francisco Convention Chairman in 1939, subsequently as District Vice President and National President, and now in the dual role of actor and Educational Chairman.

THE article in our May issue, describing the purchasing manual compiled for the City Purchasing Department at Wichita, Kansas, has brought more than fifty requests to P. A. John Pierce, asking for a copy of the book. The interest was not confined to municipal buying officers, nor even to domestic indus-

try. One of the inquiries came from a textile weaving plant in Sweden.

IT MADE front page headlines in the Springfield (Ohio) *Sun* a few weeks ago when the City Commission and City Manager unanimously turned down the recommendation of the City Engineer on its 54-mile street repair program and followed the recommendation of P. A. Herbert Peck. The problem was posed in a courteous communication from the purchasing office, stating:

"An agreement can not be reached between the city engineer, the superintendent of public works, and the purchasing agent, as to the type of material to be contracted for; therefore the following is my recommendation only . . ."

The recommendation, proposing use of asphalt and crushed gravel instead of tar and crushed stone, proved to be well documented in the experience of other cities and of the State Highway Commission. Besides, it showed a saving of some \$20,000 for the city. Corroborative research by the Commissioners indicated that the purchasing agent's investigation and judgment were sound.

WE have so often heard it said that the industrial buyer ought to take lessons from the Little Woman who does the household shopping, that it comes as a distinct pleasure to quote from an address by Mrs. Lucy F. Sheive, a Boston home economics expert in the market information division of the New England Extension Service. Speaking at the Maine Farm and Home Week conference at Orono, Mrs. Sheive held up the industrial buyer as a model and urged Maine housewives to assume the professional role of purchasing agents in their marketing.

"A purchasing agent for a commercial concern is specially trained," she said, "and buys on the basis of

pretty exact specifications. A lot of wives buy in hit-or-miss fashion. To buy wisely, consumers need to have in mind what they want, know when to buy particular items to advantage, and be able to recognize value. Price alone is not the determining factor of what is or is not a good buy, although it probably has the greatest effect for most shoppers. How these purchases are made has a great effect on the family's nutrition and budget."

Thank you, Mrs. Sheive.

• • •

NO surplus skeletons in the official closets of the Philadelphia Board of Education. Consequently Purchasing Agent James Williams had to go out in the open market to buy a human skeleton for the use of biology students at Lincoln High School. The request for bids on this unusual item got unusually wide circulation, for it was picked up on the wires of the International News Service.

• • •

Thappened in June, while there was still a buyers' market in automobiles. City P. A. Albert Losche of Indianapolis was literally crowded out of his office when he called for bids on 20 cars. A total of 220 bids were presented by eager salesmen and dealers, so many of them appearing in person that the purchasing office was too small to accommodate the crowd, and Mr. Losche was forced to move temporarily into the council chambers for the bid opening.

• • •

ANOTHER public purchaser gets his picture in the papers, in the daily "Photo Quiz" of the Los Angeles Herald & Express, a feature that tests the readers' familiarity with prominent personalities. The photogenic P.A. was County Purchaser Wayne Allen, whose smiling countenance appeared alongside those of film stars Rita Hayworth and Larry Parks.

• • •

BUSINESS is falling off at the Amtorg Trading Corp., Russian purchasing agency in New York. Annual volume is down from \$100 million to \$8 million; staff has dwindled from 700 to 17; quarters have contracted from a 9-floor layout on Madison Avenue to a single floor in the garment district.

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are less frequent
when you use*

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"HERCULES"
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WIRE ROPE

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**Its strength...its
toughness...its unusual
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These essential life factors are not a matter of chance. They are the result of combining "HERCULES" quality and PREFORMING. This is a winning combination as Preforming is the process that increases the life of a wire rope, by freeing it of internal stresses. It also makes a wire rope easier, quicker and safer to handle.

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WIRE ROPE
for any **TOUGH JOB**

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**"HERCULES" (Red Strand) Flat-Laced
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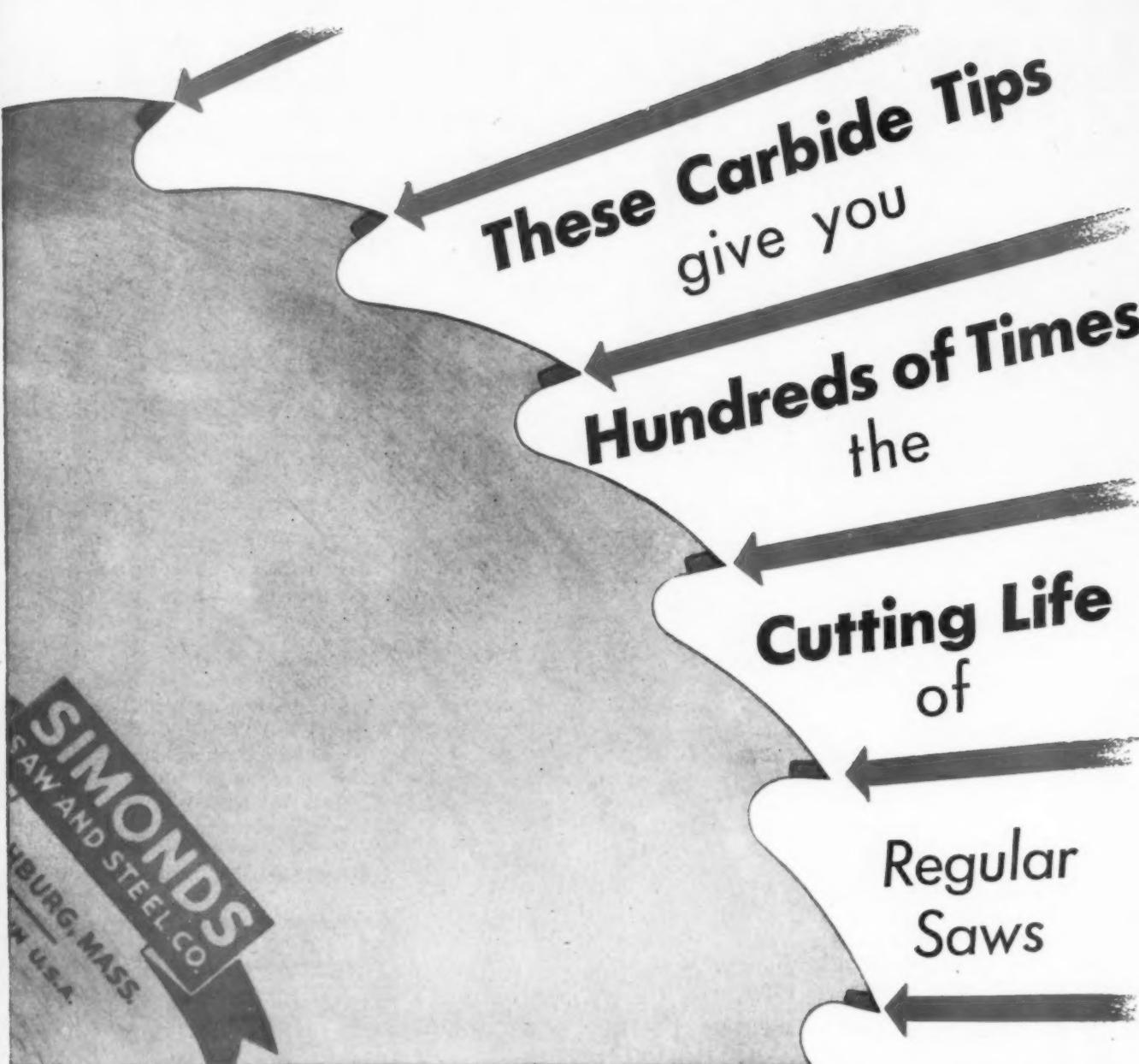
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Chicago 7
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Houston 3
Denver 2
Los Angeles 21

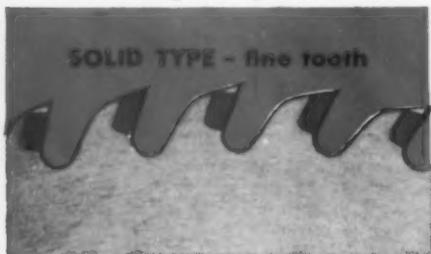
San Francisco 7
Portland 9
Seattle 4



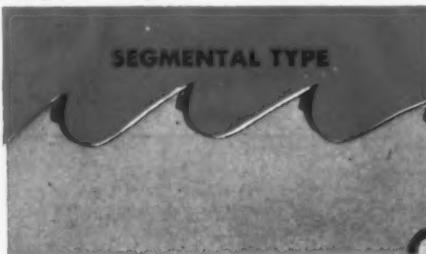
...on hardwoods, plywoods, plastics, compositions and non-ferrous metals

Cutting edges that stay sharp for weeks, sometimes months . . . smooth, straight cuts that need little or no finishing . . . record-breaking uninterrupted work-runs . . . dependable, trouble-free, proven performance with savings all along the

line . . . all this and more is now yours with SIMONDS CARBIDE-TIPPED SAWS. Made to Simonds rigid, high-quality standards in tooth-spacings and types for specific applications as described below. Ask your dealer today for new, illustrated fact-sheets . . . see how you can step up production and cut your costs with these specially designed SIMONDS SAWS.



SOLID TYPE—Fine Teeth Used on double-end tenoners, and for ripping or trimming plywoods, laminates, abrasive materials such as bakelite, and for regular cut-off work. {Large saw at top of page is the coarse-tooth Solid Type for general work in furniture and mill-work plants.}



SEGMENTAL TYPE For cutting aluminum, magnesium, bronze, and other non-ferrous metals . . . coarse or fine teeth replaceable in segments.



INSERTED-TOOTH TYPE For non-ferrous metal similar to Segmental Type. Any tooth can be quickly and easily replaced.

Branch Offices in Boston, Chicago,
Los Angeles, San Francisco and Portland, Ore.
Canadian Factory in Montreal, Que.

SIMONDS
SAW AND STEEL CO.

FITCHBURG, MASS.

COPPER ALLOY BULLETIN

PRODUCT IMPROVEMENT EDITION

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS

Prepared Each Month by Bridgeport Brass Co. "Bridgeport" Headquarters for BRASS, BRONZE and COPPER



Copper-base alloy hot forgings find many applications in both engineering and decorative fields. Courtesy Accurate Brass Company, Glendale, N.Y.

Copper-Base Hot Forgings Find New Markets

Bigger, more powerful presses, tool steels capable of withstanding red-hot working temperatures and high pressures, clever tool designing and a wider range of copper-base alloys have all aided materially to the rapid advancement in hot forging.

Brass still takes the lion's share of the copper-base alloy forging business, but high-strength, corrosion-resisting engineering alloys, such as Silicon Bronze and Aluminum Bronze, have opened new avenues to designers.

Hot forgings for engineering applications have replaced sand-castings because of superior strength, greater density, freedom from porosity and more accurate dimensions. They are ideal for pressure pipe fittings, valves and controls for pressure vessels, propellers, pump components, wheels, gears, cams, fire fighting equipment, surgical and dental instruments, etc.

Now hot forgings have invaded the quality field of decorative items which call for attractive designs and highly-polished, beautiful finishes. Among these are: hardware items — door knockers, handles, lock parts, hinges and clothes hooks; candlesticks, frames, flanges, ornaments and novelties.

The service life of valves, pump parts, controls, hydraulic systems, etc., can often be increased by using hot forgings from Duronze III silicon alu-

minum bronze. This alloy has greater resistance to corrosion and wear and is stronger than most metals and alloys. Hot forgings average about 90,000 psi. Its high yield strength, fatigue and wear resistance values are desirable assets for engineering applications.

In the field of pole line hardware, Duronze III and Silicon Bronze No. 632 forgings are also helpful in cutting

down excessive weight through improved physical properties. Their resistance to corrosion from weathering makes them excellent for outdoor construction and for use in equipment for water works, sewage and waste treatment plants.

Laboratory Service

Customers, trying to effect economies in fabrication, can call on our laboratory for help in selecting the alloy and temper which will serve best. Contact our nearest District Office for any service we can render—or write for the Bridgeport Technical Handbook.

HOT FORGING RODS		Bpt. Forging Rod 133	Naval Brass 24	Manganese Bronze 19	Muntz Metal 14	Duronze III 707	Duronze II 1232
Copper	%	59.50	60.0	58.5	59.75	91.0	97.03
Lead	%	1.75	.15				2.85 Silicon
Tin	%	.20	.75	0.75			0.12 Iron
Zinc	%	38.55	39.1	39.45	40.25		
Iron	%			1.0			
Manganese	%			.3			
Tens. Strength psi	{Hard* Soft}	72,000 52,000	80,000 55,000	83,000 72,000	72,000 54,000	100,000 85,000	90,000 55,000
Yld. Strength psi	{Hard* (@1/2% extens. under load)}	50,000 20,000	52,000 25,000	55,000 30,000	50,000 21,000	50,000 45,000	
Elongation % in 2"	{Hard* Soft}	50 45	15 50	25 45	52 50	10 30	18 55
Rockwell Hardness	{Hard* Soft}	B78 F78	B78 B50	B85 B55	B78 F80	B95 B85	B85 B50
MECHANICAL PROPERTIES AS HOT FORGED							
Tens. Strength psi				60,000		90,000	60,000
Yld. Strength psi				25,000		45,000	24,000
Elongation % in 2"				35		30	70
Rockwell Hardness				B52		B85	B35
Machinability Rating**	80	30	30	40	60	30	
Cold Working	F	F	P	F	P	E	
Hot Working	E	E	E	E	E	E	
Hot Working Range °F	1200— 1500	1200— 1500	1150— 1300	1150— 1450	1300— 1600	1350— 1550	

*Hard temper—values are for rod of commercial hard drawn temper. **Machinability Rating—Free cutting brass = 100. E—Excellent G—Good F—Fair P—Poor

BRASS • BRONZE • COPPER • DURONZE — STRIP • ROD • WIRE • TUBING

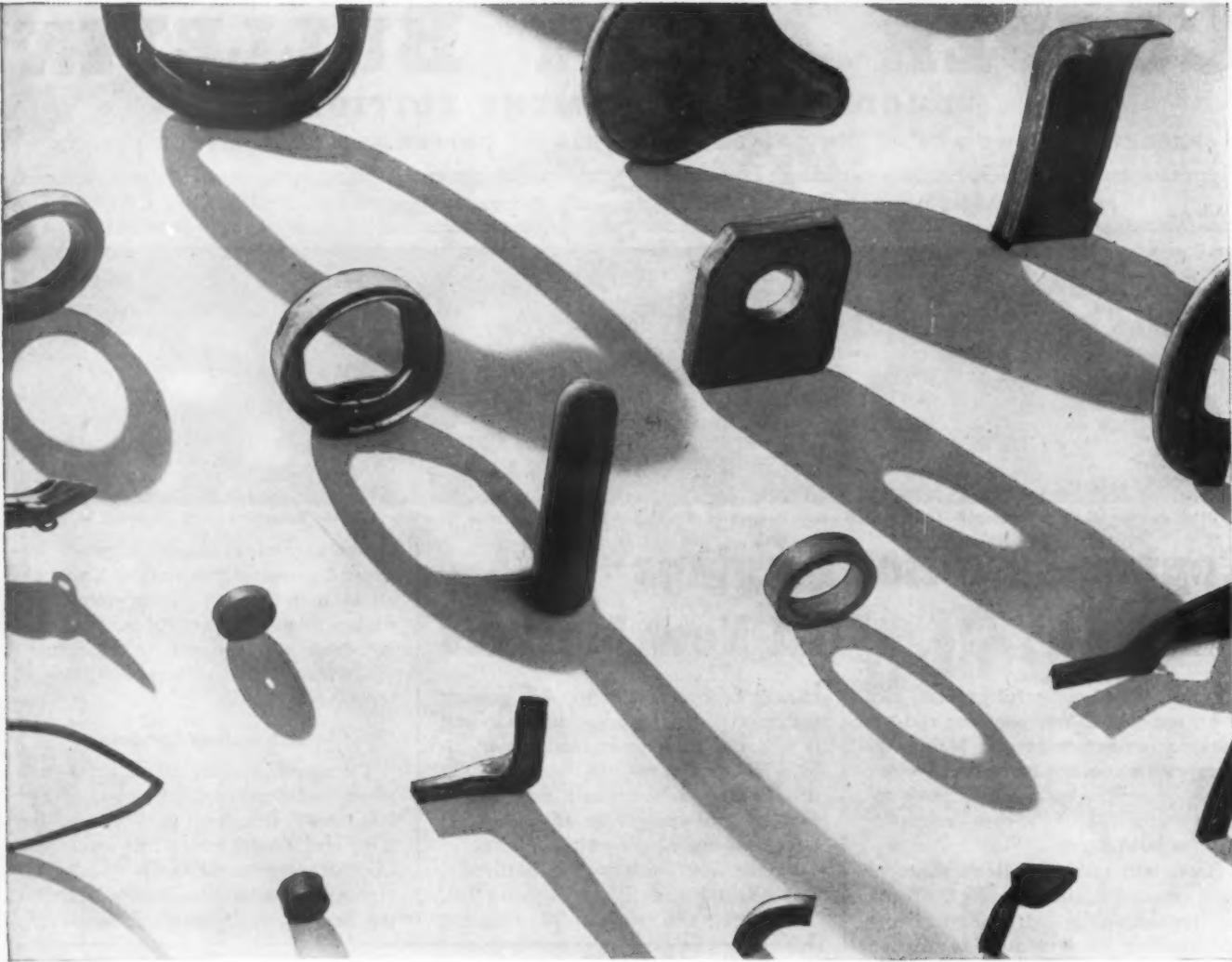
MILLS IN
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ENGINEERING in cellular rubber
that keeps pace with your *imagination*

In some minds Spongex cellular rubber is a vibration pad for huge hydraulic presses, to others it is a powder puff. For other thousands Spongex is of a density and compression range that was especially compounded to do their job best. There seems to be no limit to man's imagination in creating new uses for Spongex.

In serving man's creative mind our laboratory has formulated over 60,000 recipes for cellular rubber. Each applies one or more of the known qualities of Spongex to insulate against shock, vibra-

tion, sound, air and temperature.

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Spongex cellular rubber is available in molded shape or die cut form—or in sheets, slabs, strips, cord, tubing, or bonded to metal or fabric.

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Rubber today.*

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Want Additional Product Information? See Page 19.

PURCHASING



Servilinen

CUTS WINTER COLD CASUALTIES

- Clean soft cotton towels dry thoroughly . . . eliminate health hazard of half-dry hands when employees wash.
- Servilinen services every

type of business with uniforms, table linen and towels effectively, inexpensively. No investment necessary. Call the Servilinen supplier in your city today. His service will save you time and money.

This campaign is being sponsored in the interests
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linen supply industry.

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Mr. R. A. Preston, Chief Design Engineer,
Tecumseh Products Company, Tecumseh, Mich.



"Design simplicity is the biggest advantage we get by using standardized fractional-hp motors," says R. A. Preston, chief design engineer with the Tecumseh Products Company. "By adhering to these standards, we can often eliminate costly construction details. It's easier to select the exact motor we need, too, when we know *in advance* what the motor characteristics are."

Mr. H. S. Mulhollen, Vice President & General Sales Manager,
Essick Manufacturing Company, Los Angeles, Calif.



"Customer satisfaction is an asset we prize very highly," says H. S. Mulhollen, vice president and general sales manager of the Essick Manufacturing Company. "One way we keep our customers satisfied is to give our distributors a workable motor exchange and service plan, something we can do effectively by using standardized fractional-hp motors on our products."

STANDARDIZATION can make



STANDARDIZED FRACTIONAL
HORSEPOWER MOTORS

Gear-Motors	Home Laundry	Sump Pump	Series Motors	Shaft-Mounted Fan	General Purpose
Jet Pump	Belted Fan	Gas Pump	Hermetic Refrigeration	Oil Burner	Unit-Bearing Fan

Want experienced application engineering help in using these and other G-E standardized motors? It's yours for the asking!

Mr. J. A. Fell, Director of Purchases
Red Jacket Manufacturing Company, Davenport, Ia.



"Less detail work is what I like about using standardized fractional-hp motors" says J. A. Fell, director of purchases of the Red Jacket Manufacturing Company, manufacturers of pumps and water systems. "With motor characteristics and mounting dimensions now on a uniform basis, there is more opportunity to buy 'right out of the catalog.' Inventory problems are simpler and we get much better delivery."

Mr. J. Welker, Plant Manager
Milton Roy Pump Company, Philadelphia, Pa.



"Flexibility is what we gain by using standardized fractional-hp gear motors," says J. Welker, plant manager of the Milton Roy Pump Company. "Two frame sizes take care of all our ratings which saves assembly time and simplifies purchasing. With our gear-motor supplier carrying standardized motor parts, we get prompt delivery."

your job easier, too!

Can standardization cut your motor costs?

It's surely worth your while to find out! And it's easy—just fill out the coupon and we'll furnish the facts you need to make a decision. For more details on what standardization of small motors covers, ask for Bulletin GES-3565. Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

I'd like to talk to one of your fractional-horsepower motor specialists about the possibility of using standardized motors. My product is Its motor requirements are Other special requirements are

Just send me a copy of your Bulletin GES-3565, for reference purposes.

NAME _____

COMPANY _____

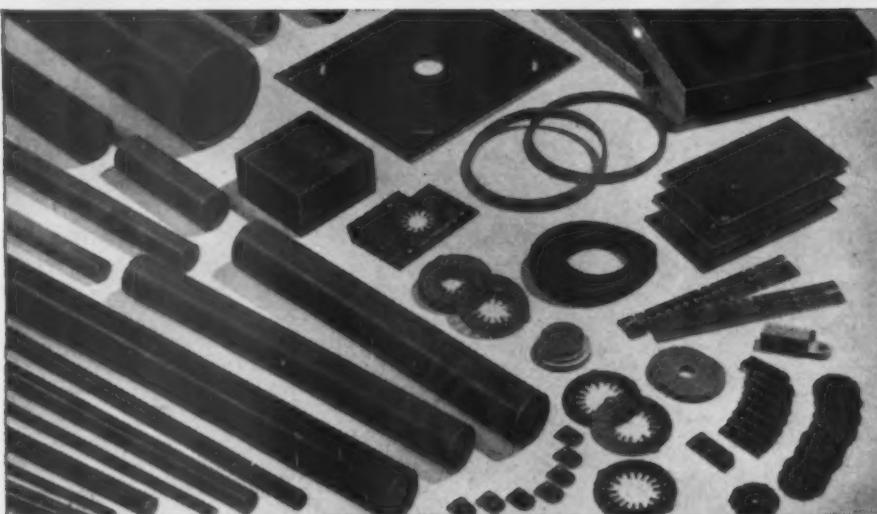
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INSUROK PLASTICS

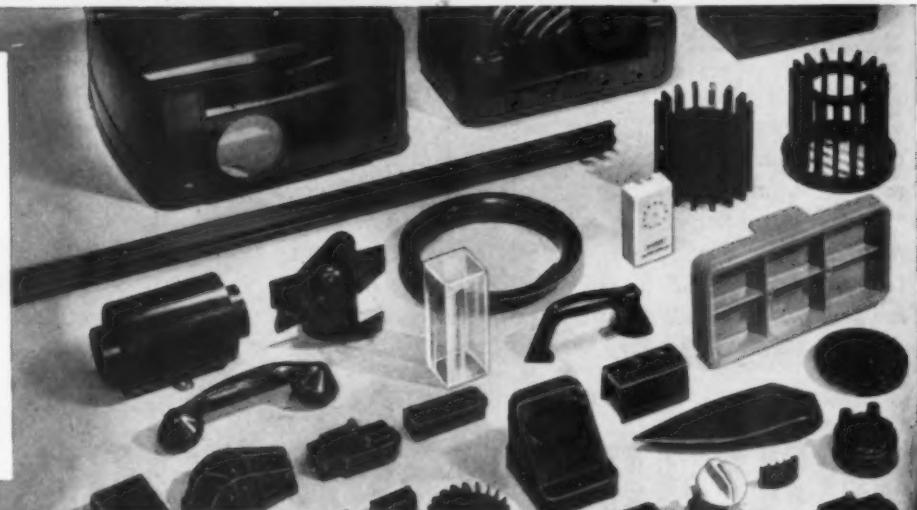


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Parts made to your specifications with various granular or chopped fabric base materials. Produced by compression, injection, or transfer process. Metal inserts can be molded into position.



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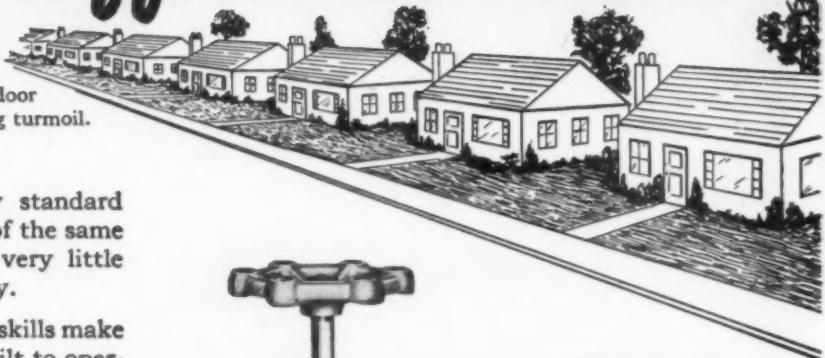
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Fig. 1503—Class 150-pound Cast Steel Gate Valve with flanged ends, outside screw rising stem, bolted flanged yoke, tapered solid wedge.



Fig. 190—150-pound Iron Body Bronze Mounted "Irene" Globe Valve with regrindable, renewable "Powellium" nickel-bronze seat and disc.



Fig. 1842—Bronze Gate Valve with solder ends for use with copper pipe or tubing. Powell Solder Joint Valves also made in Globe, Angle and Swing Check patterns.



Fig. 2608—Bronze Globe Throttling Valve. Full flow through the seat when wide open. Has special bronze stem and stainless steel disc and seat hardened to approx. 500 Brinell.



Fig. 560—200-pound Bronze Regrind Horizontal Swing Check Valve with screwed ends, screwed-on cap and regrindable, renewable bronze disc.



Fig. 1832—200-pound Stainless Steel Gate Valve with screwed ends, screwed-in bonnet and inside screw rising stem.

The Complete Powell Line includes Globe, Angle, "Y", Gate, Check, Non-return, Relief, and Flush Bottom Tank Valves in Bronze, Iron, Steel and a wide range of Corrosion-resistant metals and alloys.

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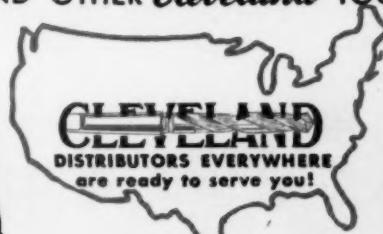
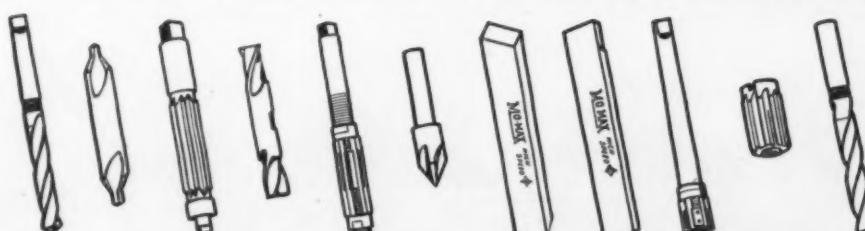
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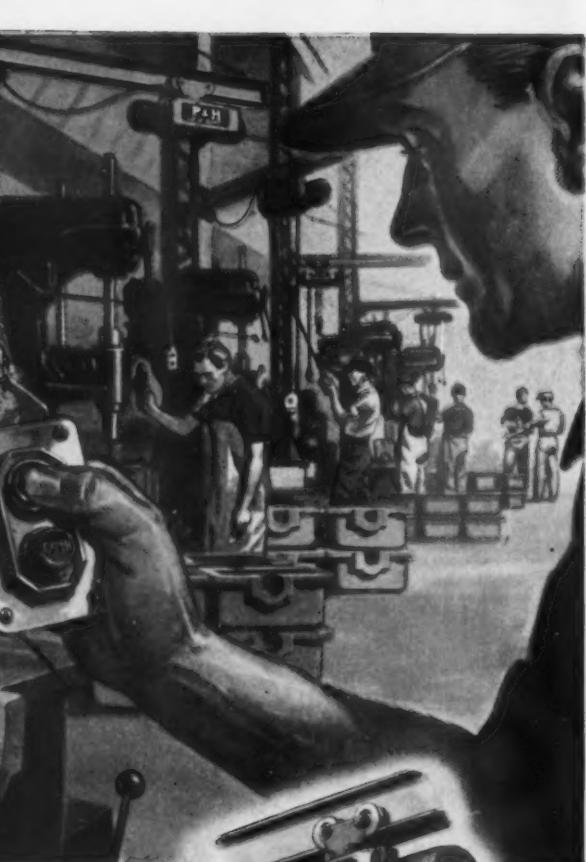
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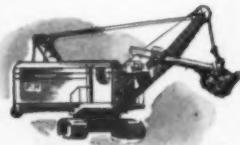
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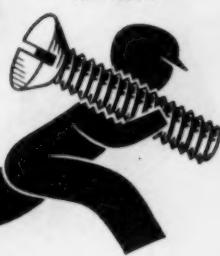
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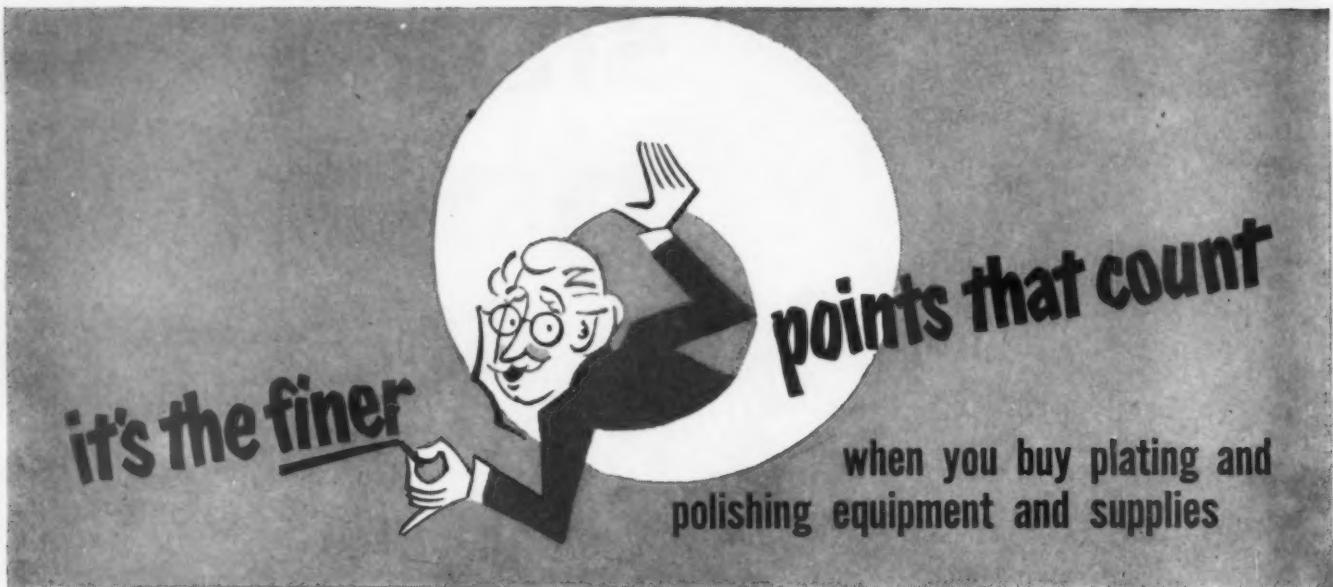
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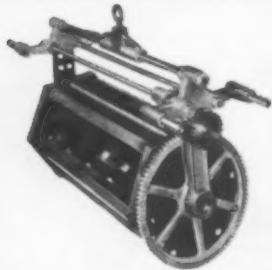
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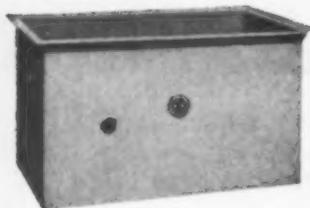


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**when you buy plating and
polishing equipment and supplies**



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Remember, the type of solution determines the type of tank and lining. H-VW-M supplies tanks for all types of electroplating, pickling, cleaning, rinsing

and similar treatments. Lined and unlined welded steel tanks, lined and unlined wood tanks, earthenware tanks... there's the correct type and style available for every kind of solution. Bulletin T-105 describes them in detail, has useful facts and suggestions to help you select the tanks best suited to your operation. Send for it.



Never forget, using the **RIGHT** cleaner means a better product. A complete cleaning job eliminates poor adhesion, tarnish or blisters, whether you soak clean or electro-clean. Remember, too, there's a specific cleaner to do the job right... *a complete cleaning job*... on every type of metal... for every type of soil. H-VW-M Matawan Cleaners are available for every type of cleaning job. They are described in detail in Bulletin C-106, together with recommendations for cleaning all commonly used metals.

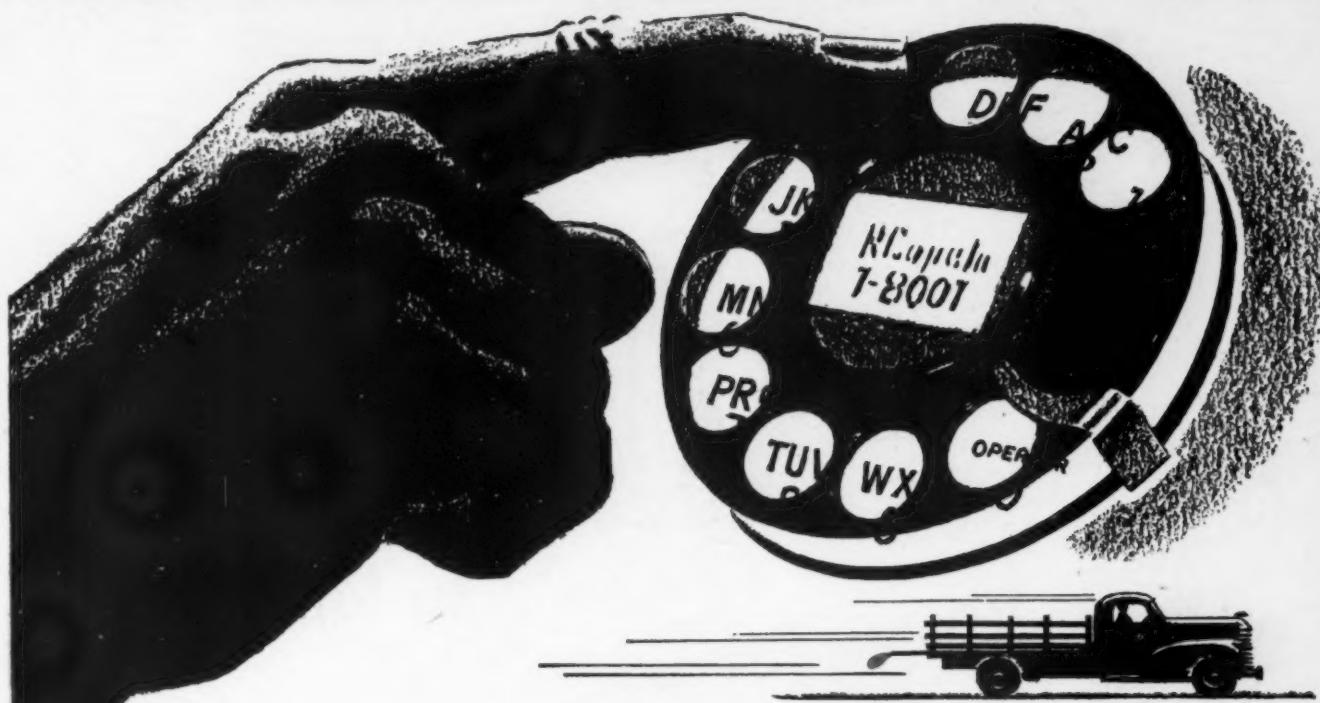
You'll be sure of the finer points that make the difference if you always remember... you can always get what you want from H-VW-M when you want it... H-VW-M products are strategically warehoused for prompt service and delivery... H-VW-M sales-engineers and laboratory technicians are always available for help in your production problems. It is this overall service and experience that have made H-VW-M the central source of supply... for over 70 years... for all the needs of the electroplating and polishing industry.

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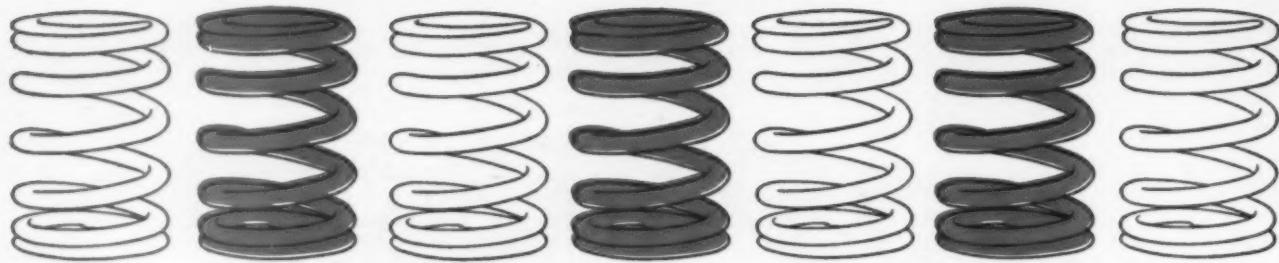


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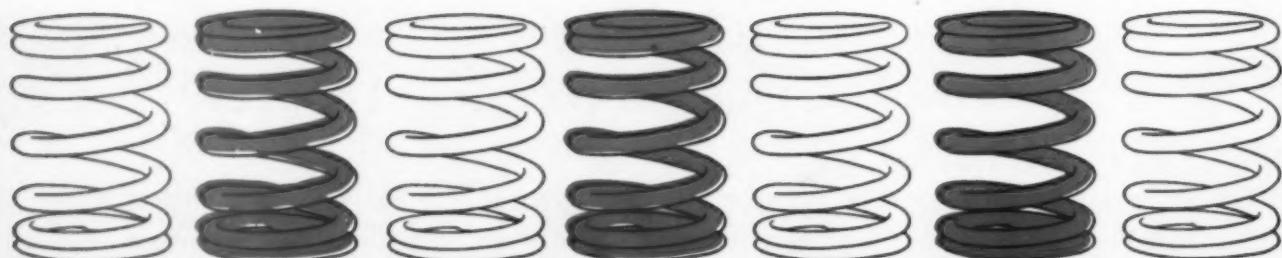
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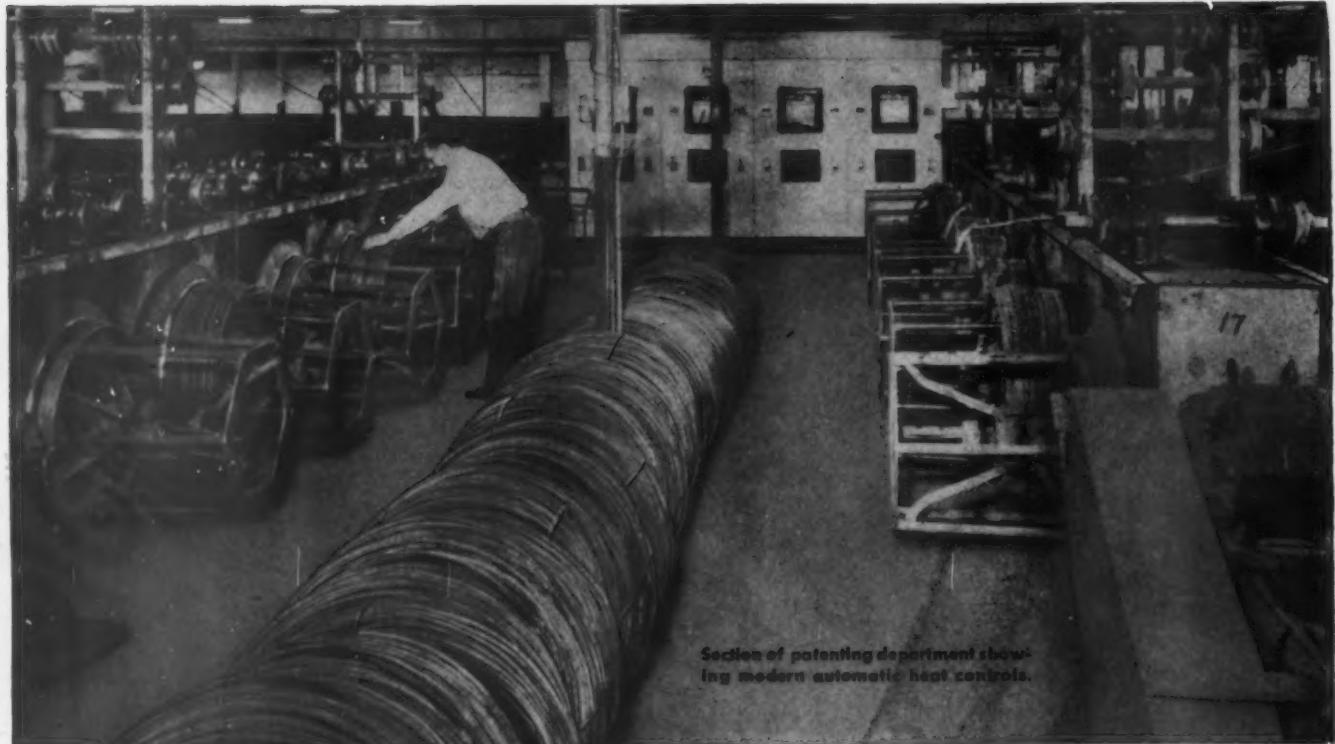
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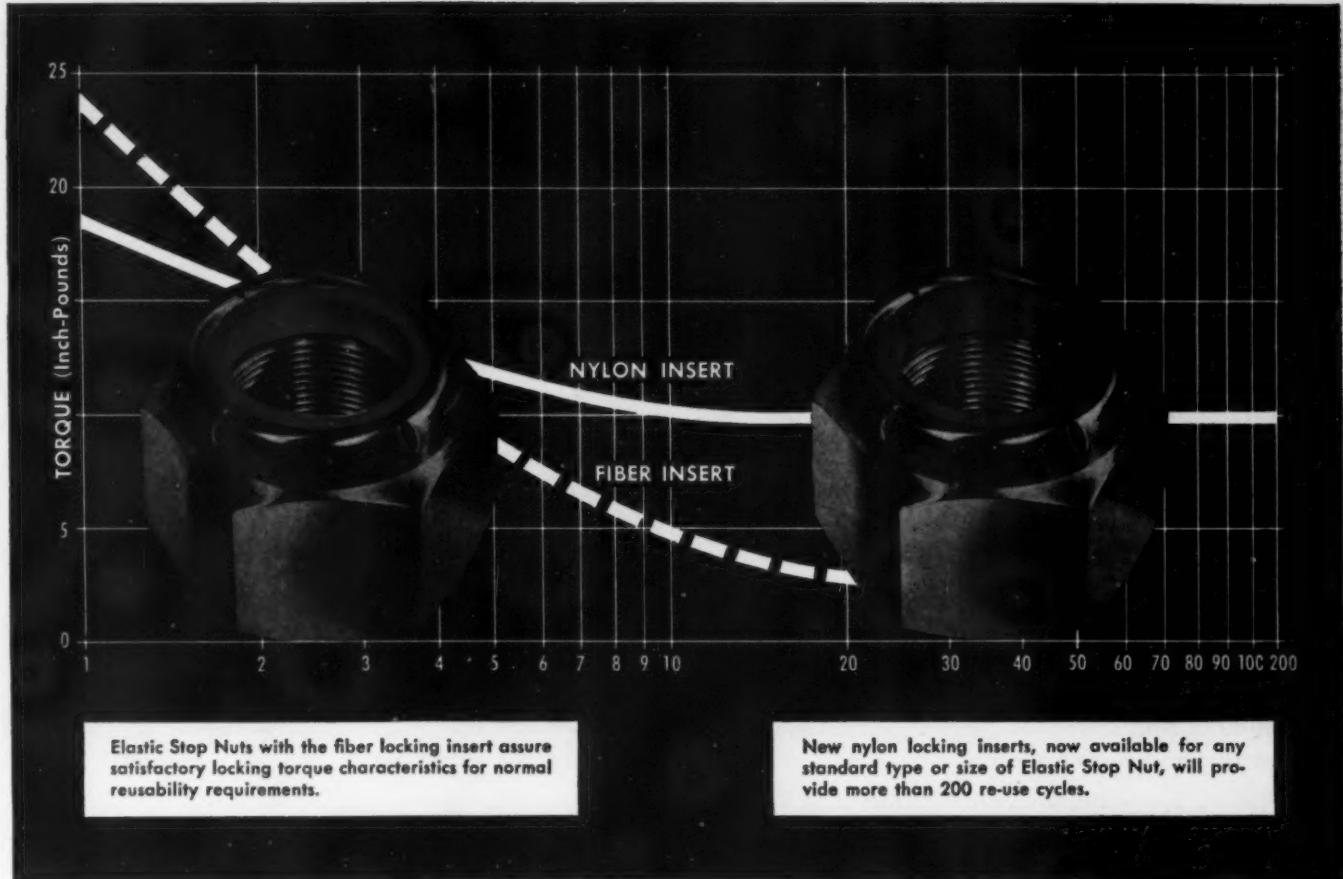
Here, all phases of wire processing . . . drawing, cleaning, heat treating, plating, finishing . . . are controlled to a degree and accuracy never exceeded, not often equalled. It's a firmly rooted National-Standard policy that can save you time and money.

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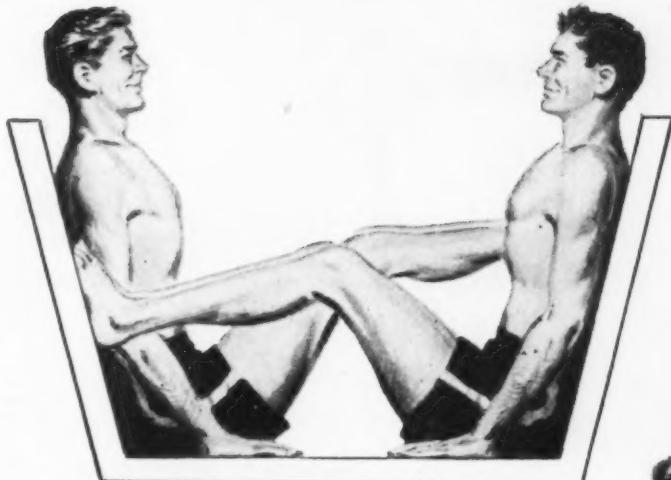


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GREATER PULLING POWER...
BECAUSE OF PROTECTIVE JACKETS
WHICH ALSO KEEP OUT DIRT AND
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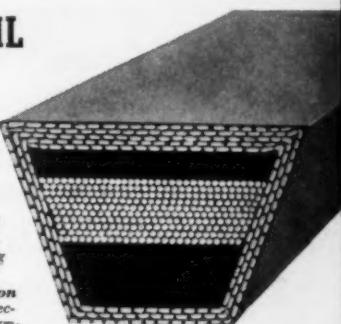
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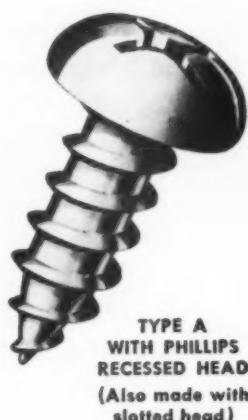
Screws that don't Measure up cause costly Slowdowns

Screws that are the wrong type, that break or otherwise don't measure up, can quickly ruin your carefully *planned* savings. That's why successful manufacturers everywhere insist on Parker-Kalon Self-tapping Screws. Parker-Kalon originated the Self-tapping Screw. Throughout 35 years of manufacture, P-K has maintained its high quality standards—standards that keep assembly lines trouble-free.

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*TRADE MARKS REG. U.S. PAT. OFF.



TYPE A
WITH PHILLIPS
RECESSED HEAD
(Also made with
slotted head)



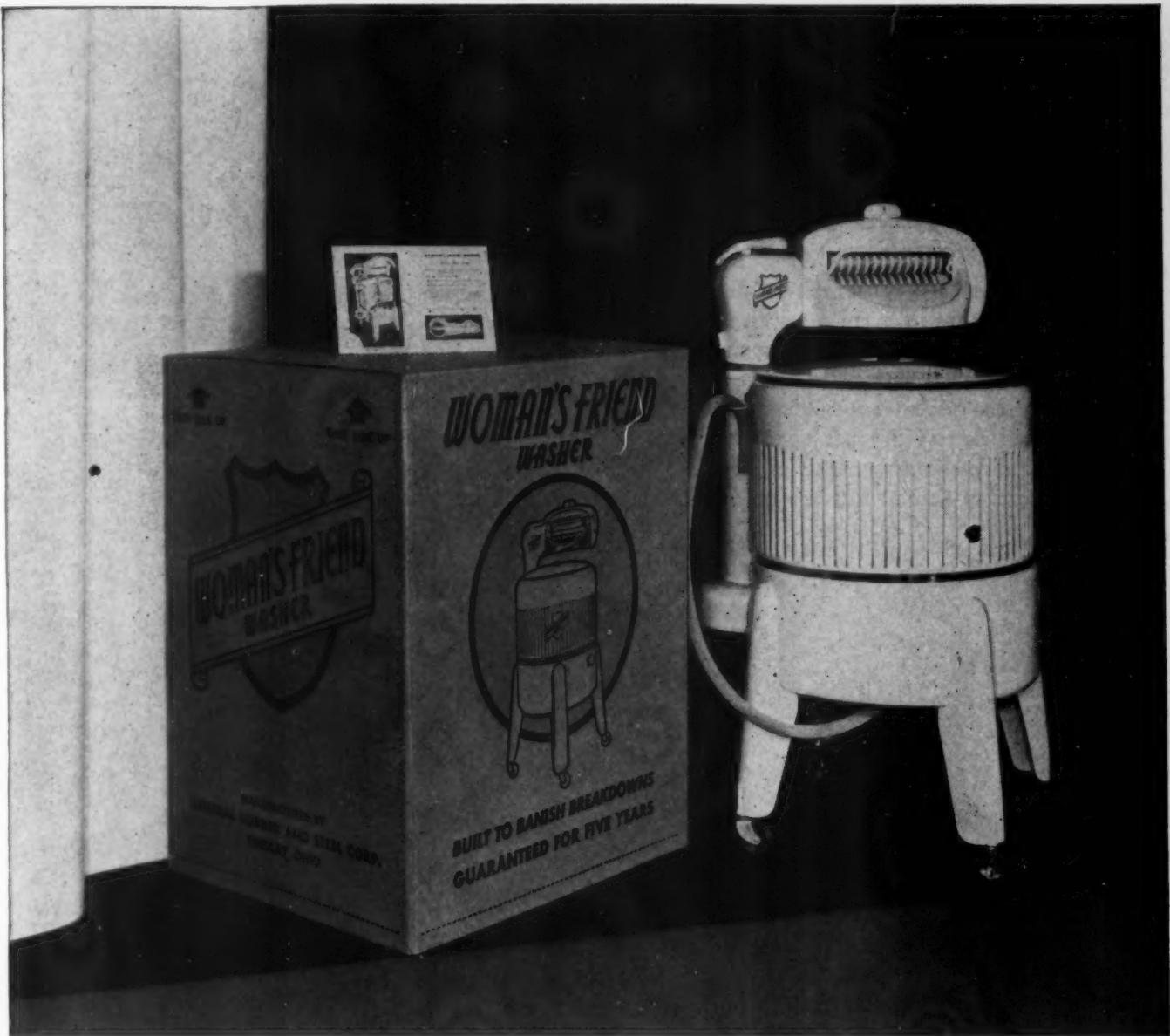
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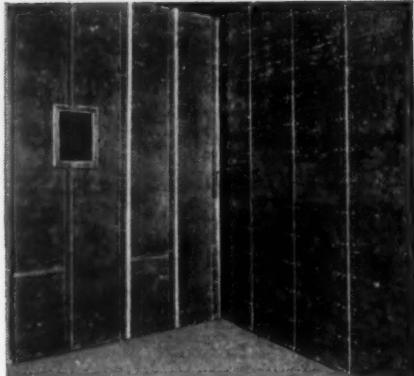
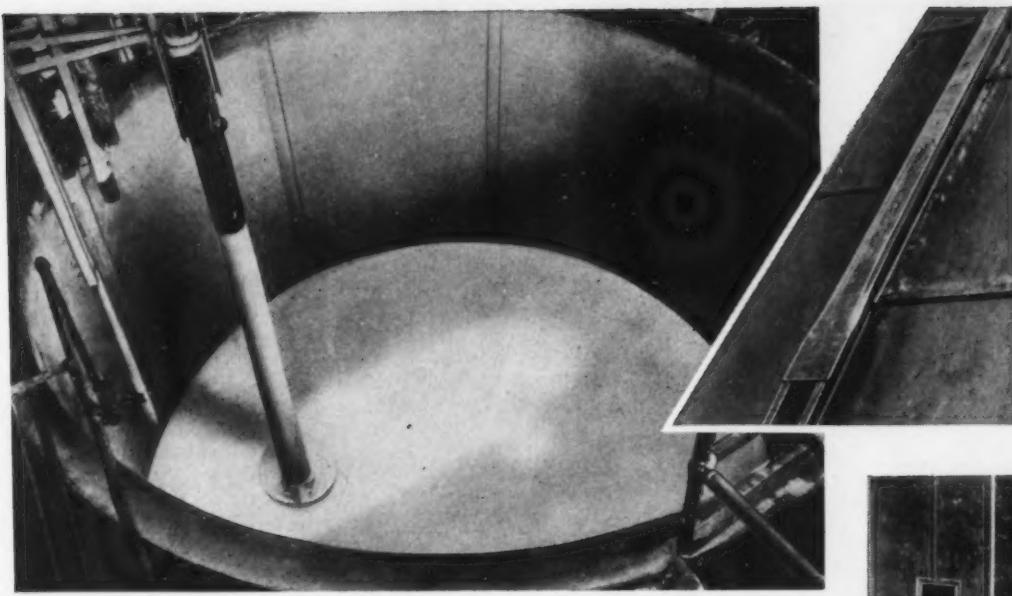
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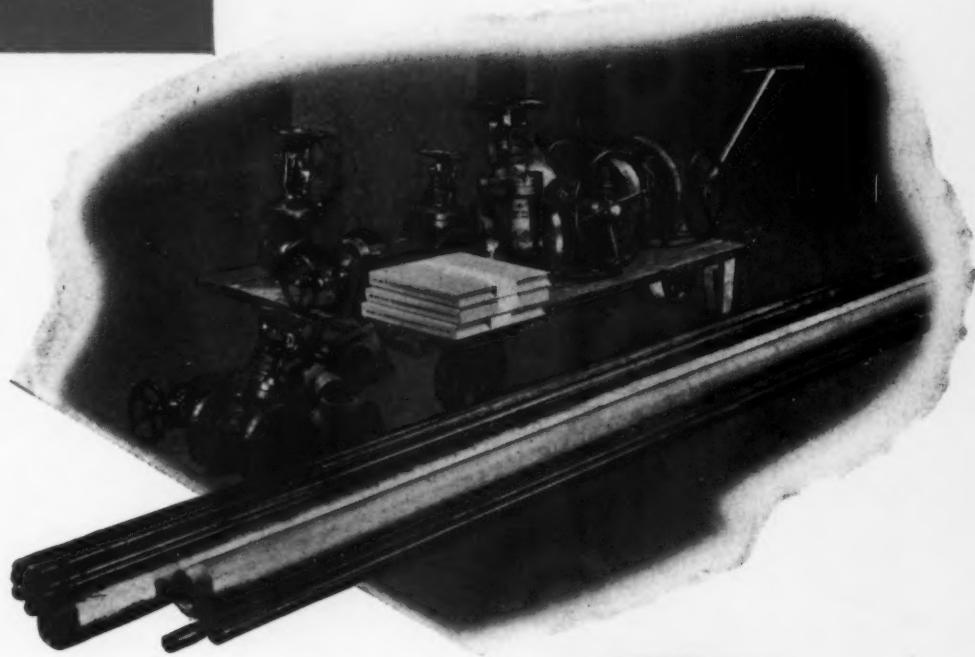
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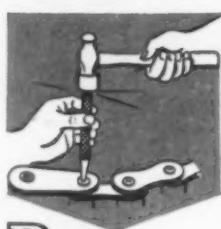
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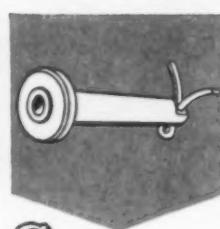
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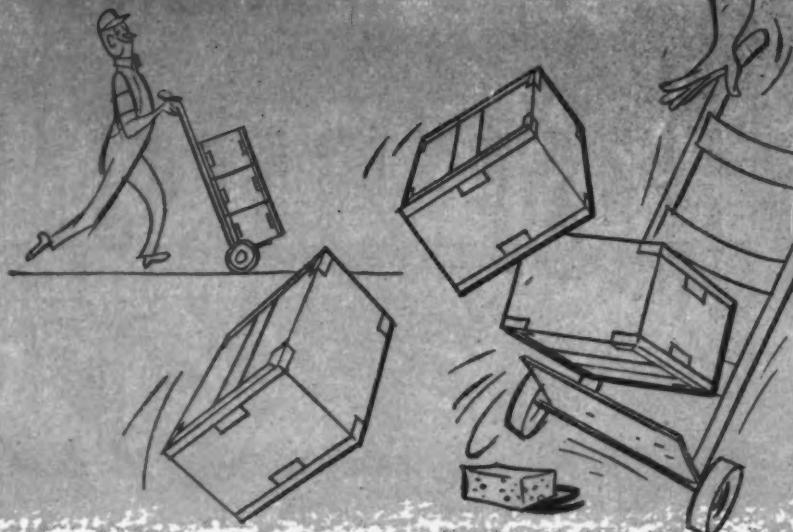
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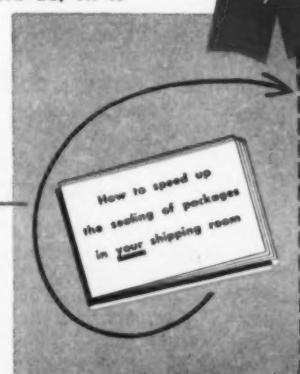


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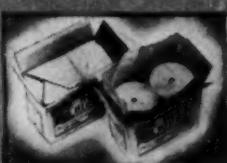
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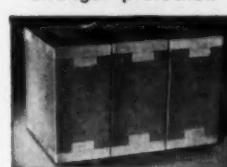
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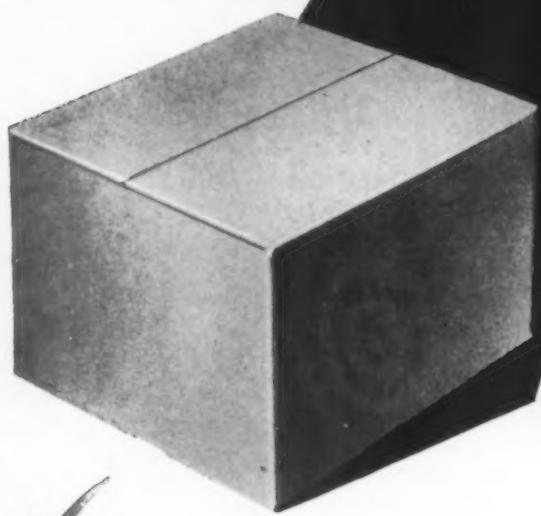
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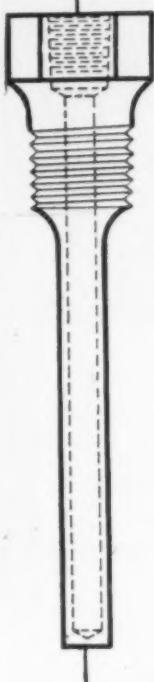
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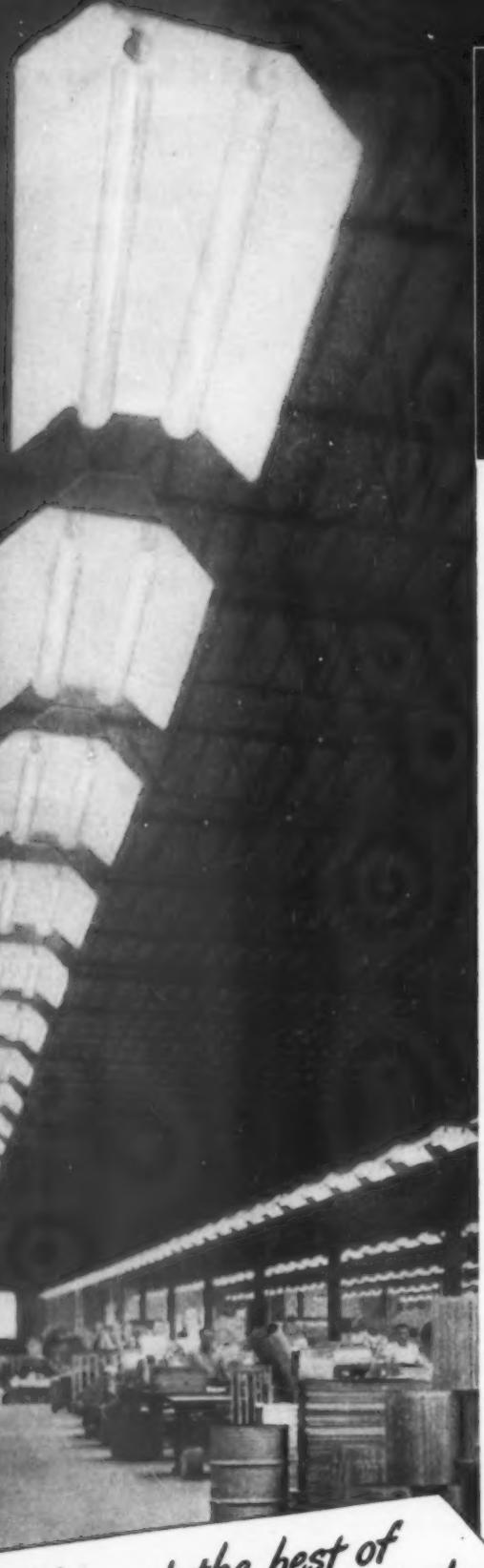
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The National Magazine of Industrial Procurement

VOL. 29, No. 3

SEPTEMBER, 1950

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Published monthly by Peeaye, Inc.
 Subsidiary of

CONOVER-MAST PUBLICATIONS, INC.
 Printed at Orange, Conn.

CONOVER-MAST PUBLICATIONS

PURCHASING
 AVIATION OPERATIONS
 MILL & FACTORY
 CONOVER-MAST PURCHASING DIRECTORY
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PURCHASING is an independent journal, not the official organ of any association. Established 1915 as "The Purchasing Agent"; Consolidated with "The Executive Purchaser".

Contents are indexed monthly and annually by the Engineering Index Service.

Subscription rates: United States, U. S. Possessions, and Canada: \$4 per year; elsewhere: \$6 per year. Single copies, 50¢.



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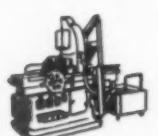
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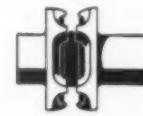
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NO HOARDING!

WHICH comes first—scarcity or scare? At the consumer level, it is glaringly obvious that it is the scare buying of sugar, nylons, soap, and the like, that creates apparent shortages which do not exist in fact. We are reliably assured that supplies are ample for any normal need. As for real demand, there is no more sugar being consumed, no more nylons worn, no more soap used, than before the Korean crisis. It's a plain case of selfish hoarding.

Such buying practices are quickly reflected back to the distribution and production levels in terms of more orders, heavier buying, longer materials inventories, and higher prices. But analysis of orders and inventories all along the line indicates pretty clearly that distributors, contractors, and manufacturers are indulging in some hoarding on their own account. This is rationalized by the argument of "protection" against the excesses of others and the necessity of maintaining a competitive position, but in the end nobody wins.

There is no need to argue the vicious economic and psychological effects of hoarding. But if those self-evident arguments do not carry sufficient weight with individual cases to curb the practice, let's descend to the level of selfish interest. Hoarding is the quickest and surest way to precipitate controls over materials and prices. If controls are necessary, and any real shortages develop, the first step will be the mandatory redistribution of inventories, so that any individual advantage of "protection" is forfeited. If excess inventories have been accumulated at premium prices, a direct and immediate monetary loss may be entailed.

Controls are not intended to deprive any legitimate user of the materials he needs. They are the means of maintaining a flow of materials in accordance with normal usage and national need. If that flow is maintained by intelligent voluntary action, mandatory controls need not be invoked.

Voluntary allocation of materials by suppliers, through it may run foul of some technicalities in our fair trade laws, is one solution. A better way is intelligent self-restraint in buying, fortified with good vendor relations and buyer-seller cooperation. For in the last analysis, hoarding is on the buyer's side of the ledger. And hoarding—whether in the deep freeze and on the pantry shelf, or in the industrial warehouse and stockroom—is a blot on the shield of purchasing.

Stuart F. Henry

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Highlights

This issue's important features summarized for the busy reader



War clouds on the horizon dominate the thinking of the civilian and industrial communities alike. Recent experience reminds us that the impact of a wartime economy falls most promptly and heavily on the purchasing department, responsible for maintaining the flow of materials to keep the industrial plant in operation. Pertinent and timely in facing this situation are two important features of this issue. On page 79, our Washington editor reports on the possibility of an early move to full-scale **Mobilization and Controls**, with first-hand information from high military sources on how the war requirements of today differ from those of World War II, so that the control pattern of the 1940s becomes an unreliable guide to probable developments. This month's reader survey (page 77) deals with industry's readiness for **War Production**. Check your own company's situation with this consensus on conversion.

No Hoarding! is the theme of the editorial on page 67. Here is one of the great hazards, both to our immediate military needs and to the general economic state of the nation. And it is something about which the purchasing agent can exert a tremendous influence, in sound policy and action.

An echo from that June "Spend to Save" issue that so many of you liked so well is Julian Davies' article on page 75. Can the purchasing agent for a small or medium size company carry on systematic and effective **Cost Cutting** programs of value analysis corresponding to those in the larger organizations? His problem is somewhat different, to be sure, but there is much that can be done even within the obvious limitations of time and staff in the small department. Still more can be accomplished if management can be persuaded to provide adequate facilities for a complete purchasing job. The article presents some practical pointers on how to get started and where to look for best results.

Leo Parker's legal article in this issue (page 118) is compiled in direct response to a problem raised in one of the purchasing courses. An apparent conflict has been noted in the legal interpretation of **Ownership of Goods** under the provisions of the Uniform Sales Act and the passage of title under f.o.b. terms of shipment. Analysis of pertinent court decisions involving these points of law clarifies the basic principle governing title to goods in possession of the carrier.



A study of more than ordinary interest to purchasing agents and top management is the survey (page 82) on the **Cost of Purchasing**. While it is probably impossible to set up a standard or yardstick capable of application to all industry, here is the experience of a representative group of companies on what it costs to spend a dollar and to issue an order.

This month's **Guest Editorial** (page 71) is the first in a new series introducing the members of the 1950-1951 Executive Committee of the National Association of Purchasing Agents. Herb Gaston of Baltimore, serving as Vice President for District 8, leads off with a vigorous comparison of political factors in public buying and reciprocity in industrial dealings.

Inventory Control has been an important factor in recent purchasing developments and will continue to command close attention. The article on page 73 considers inventory policies from the standpoint of an investment of working capital. On page 89 is described a simple procedure that has resulted in substantial inventory reductions when control is vested in the purchasing department. A third article bearing on this subject appears on page 92, showing how inventory controls fit into the organization scheme under the modern concept of materials management toward which purchasing is developing.



Let's take a look at the other side of the desk. What happens to your order when it is received by the vendor? A sales executive defines **Vendor Service** in the article on page 98, and a purchasing executive gives a factual analysis of service on page 84.

Scrap Disposal is a purchasing department responsibility in many companies. Getting the maximum return for scrap involves a careful balancing of the cost of preparation against dollar realization for graded scrap, and a well organized method of segregation at the point where scrap originates in the plant. The article appearing on page 86 is based on the methods and experience of the Westinghouse Electric Corporation.

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new **Trade Bulletins and Catalogs** that are yours for the asking (page 19) and the illustrated summary of **New Products and Ideas** (page 128) will help you keep abreast of industrial progress.

HOARDING STEEL . . .

is hardest on the hoarder!

Buying steel for which you have no immediate need helps set up a vicious chain reaction. The next fellow follows your example—and the next. Supplies are soon depleted. In a week or two you may be searching in vain for a certain steel—which is lying idle in a neighboring plant!

The primary purpose of the steel warehouse is to supply the day-to-day needs of industry—not to help build up a host of private stock piles. Warehouse stocks are constantly being replenished by mill sources to balance receipts against shipments. But if everybody starts buying beyond their immediate needs the system breaks down—and everybody suffers.

The vital function of the steel warehouse was recognized in World War II. Provision was made for continuous replenishment of warehouse stocks. This recognition continues.

Hence we urge steel users to exercise judgment in placing orders. Order from warehouse for your current needs only. Our company and all the other steel-service organizations will continue to serve you to the best of our combined abilities. But our usefulness will be crippled if steel buyers themselves let the situation get out of hand. So let's work together to maintain production throughout the country.

PARTIAL LIST OF PRODUCTS — BARS • STRUCTURALS • PLATES
SHEETS • TUBING — IN CARBON, ALLOY & STAINLESS QUALITIES

RYERSON STEEL



STEEL-SERVICE PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • DETROIT • CINCINNATI • CLEVELAND
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

Reciprocity vs. Politics

By J. H. Gaston



pality. He was appointed to this position in 1931, for a four-year term, and twice reappointed. During his third term of office, an amendment was written into the City Charter, placing the Purchasing Agent under City Service status and naming Mr. Gaston as the incumbent. It begins to look like a steady job, and Baltimore is happy to have Herb Gaston in the office.

Prior to taking over the municipal buying responsibilities, he was purchasing agent for a large eastern oil refinery. He is, therefore, well versed in both industrial and public buying.

A long-time member of the Baltimore Association of Purchasing Agents, he has been consistently active in

WHY is it that public buyers are always considered to be politically hampered while private buyers are seldom if ever considered to be similarly hampered by company policies or reciprocal intercompany tie-ins?

We, the buyers for States, Counties or Cities, are asked many times, "Aren't you terribly hampered by politics?" Or someone else will say, "I would not have your job for anything." Answering the second statement, it may be a good thing that many feel that way, as they then are not so apt to try and take our positions away from us. On the

first question, my answer generally is that I am hampered less politically than the average private buyer is encumbered by either company policies or reciprocal agreements, and I hope this is the case with the average public buyer.

It is not my intention to single out many well-known trends that regulate some private buyers but, having spent a number of years in industrial buying, I do know that such conditions exist, and the P. A. is required to rubber stamp the procurement of many items that he would probably like to have follow normal buying procedures so that

J. Herbert ("Herb") Gaston is Purchasing Agent for the City of Baltimore, the nation's sixth largest municipality. He was appointed to this position in 1931, for a four-year term, and twice reappointed. During his third term of office, an amendment was written into the City Charter, placing the Purchasing Agent under City Service status and naming Mr. Gaston as the incumbent. It begins to look like a steady job, and Baltimore is happy to have Herb Gaston in the office.

all phases of Association work. Following two terms as President (1934-1936), he was named National Director, and has the distinction of serving in this office probably longer than any other National Director of record. The logical sequel to this valuable experience and service in the District Council of District 8, is his election to the National Executive Committee, N.A.P.A., as District Vice President. In this capacity, he represents the Baltimore, Buffalo, Carolinas-Virginia, Eastern New York, Elmira, Lehigh Valley, New York, Philadelphia, Reading, Rochester, Syracuse, and Washington (D. C.) Associations in national affairs.

Mr. Gaston recently completed a term as District Governor of Lions International. His chief hobby is the sailing of Chesapeake Bay log canoes, a type of craft peculiar to the northern Bay waters. These boats are fast and tricky, and command considerable interest and attention at every Bay regatta. Another of his hobbies is the taking of colored motion pictures.

he could use to the best advantage the benefits of his training.

I feel that the worst form of politics that we public buyers have to deal with comes from the outside and not from the elected public executives. It is the outcome of the unethical attempts made by some politically minded sellers to get an order for themselves regardless of the value to the public. They will attempt to bring political pressure to bear on public executives in order to influence the placing of an order, but they would not think of making the same attempt to bypass the purchasing agent by putting pressure on private executives and, in this respect, they do not accord the public official the same courtesies and respect that they know they have to give to the private citizen who holds an executive position which would put him in contact with the purchasing agent.

They will tear apart specifications for their own benefit and bring in the law if they think they have a slight chance to win, regardless of ultimate costs. They know that should they try such tactics on the industrial buyer the door would probably be closed against them on future business. These same men will insist on the purchase of their materials by the public buyer because of a "low bid", regardless of the value to the City or State. Many bidders have no regard for the desires of the using departments or

bureaus as to standardization or past performances of known materials. They have something to sell and in many cases will exert any means to make the sale even to the point of embarrassment of public officials if they feel it will get them the order. To repeat, they seem to have less respect for such officials than they do for a private executive in a similar position in industry. These practices, if allowed to predominate, would take away all discretionary powers of the public authorities and would make any form of standardization impossible or, to say the least, quite difficult.

To guard against these pressures, the public buyer has to be ever vigilant and cautious. He is spending public funds, he must be fair and unbiased, he must have a fair and unbiased policy that is unwavering and always deal from the top of the deck. He must be able to deal with the politically-minded on the same grounds that he deals with those who want to do business on a business basis. He is many times the one on whom all eyes are focussed, and his decisions, either directly to the bidder or his recommendations to his governing body, go a long way to make good or bad public relations.

Company policies or reciprocities, on the other hand, may at times tie the hands of the private purchasing agent and his scope of buying could be hampered by such reciprocal

policies. Whereas it is probably true that much time is saved on the placement of orders through a known channel, with intercompany billings and all related paper work cut proportionately, it is also true that the benefits of competition are lost and many times the doors would be closed to the very ones who would be in the best position to bring in the new and up-to-date information on materials progress that we all have to depend on so much.

Public relations in any purchasing office, public or private, is a most essential part of our day's work. If we in these offices build up a feeling of goodwill between the office personnel and the numerous sales contacts that we interview daily, everyone in turn benefits, and the company or the political subdivision of government which we represent will gain in the long run.

Whereas this item is being written to appear in "PURCHASING", and may not be seen or read by any great number of sales executives or salesmen, it is my hope that those who do read it will consider carefully before they resort to the pressure methods as indicated in this item. The average public buyer is a career man and one who has the confidence of the elected officials. In fairness to them and the purchasing officer, the same sales methods should be applied in both cases.



Landscaping project on East Capitol Drive, Milwaukee.

Worm's-eye view—a botanist's paradise, but definitely not a lawn.



A Weed Grows in Milwaukee

WHEN the City of Milwaukee decided to beautify the boulevard on East Capital Drive, and City P. A. Joe Nicholson let the contract for landscaping, he prudently specified that the top-soil furnished should be free from weed seeds. He also purchased government inspected lawn seed with a minimum of weed content. The soil was spread and rolled. The seed was sowed, and brought forth its fruit in its season. But—

"We expected a few weeds, but realized a 95% crop—probably the finest stand of weeds ever seen in these parts," said Mr. Nicholson, sadly. "There was ragweed, quack grass, thistles, lamb's quarters, and mustard; also a few thin blades of grass poking up in between."

The contractor was also surprised and sad. He hinted at sabotage, though conceding that the most enterprising saboteur might have had trouble finding that quantity and variety of weed seeds.

But the evidence—and the purchase specification—were against him. Except for a few weeks delay, the City was not the loser, thanks to prudent purchasing. The contractor footed the bill for plowing up the weedy boulevard, and for re-seeding the strip with a new supply of weedless lawn seed.

60 days supply? 90 days supply? Fiddlesticks!

INVENTORY IS AN INVESTMENT

By J. H. O'Connor
Management Engineer

THIS writer is "fed up" with the glib generalities offered by the so-called master minds on the subject of inventory control. Usually they stress the absolute necessity of keeping inventories down to some arbitrary number of weeks or months supply. This over-simplification of a complex problem has cost business untold sums. If you take exception to this statement, please bear with me long enough to review typical examples of the financial efforts produced by such policies.

First, the practices advocated in this article are predicated on an elementary principle which many managements have apparently lost sight of: *The one and only quantity to manufacture or buy is that quantity where the sum of the cost of possession and the cost of acquisition is the lowest.*

Perhaps that statement sounds complex. It's not. Some simple sixth grade arithmetic should make it readily understandable.

Let's take a few typical case studies and analyze the dollars and cents effects of various quantities. We will assume that it costs approximately 20% to carry inventory, including taxes, interest, obsolescence, storage, etc.

Example I concerns the determination of a manufacturing quantity. Management's policy of keeping 1½ months supply ahead certainly attains the low, low inventory desired. But look at the premium being paid out in the form of excessive set-ups! What business man would knowingly turn down a proposition whereby he would make a \$49.50 profit on an investment of \$42.50? Yet that is exactly what is happening in hundreds of plants every day.

Perhaps the part is made for sale instead of use; then a comparable buying policy on the part of the purchaser could be directly responsible for the high costs resulting from manufacture in the least economical quantity. Nobody wins.

Example II is a purchasing determination, in which the quantity differentials are clearly shown in the vendor's quotation. The policy of buying 3 months supply gives an inventory turnover of 4 times a year instead of 1, to be sure, but certainly a firm would have to be in dire need of immediate cash to turn down the handsome profit of \$1,200 on a \$1,313 investment.

Another favorite current subject is the specter of steadily climbing office and indirect expense. Management again is at fault in promulgating arbitrary and inflexible inventory rules which cannot help but contribute to materially higher indirect expense in the repetitive processing of transactions representing small sums.

Here again let us examine financial results. Example III shows how inventory policy is responsible for increasing the cost of order processing by 60%. The amounts involved are small, and doubtless many readers will maintain that

EXAMPLE I

Item — Special Sleeve
Yearly usage — 1,200 pieces
Set-up cost per lot — \$8.25
Unit cost (less set-up) — \$0.10 each
Inventory policy — 1½ months supply

ANALYSIS:

	1½ MONTHS SUPPLY METHOD	MOST PROFITABLE METHOD
Quantity	150 pieces	1,000 pieces
Set-up cost, per year	\$68.00	\$10.00
Inventory carrying cost, per year	1.50	10.00
Yearly variable cost	\$69.50	\$20.00
Additional profit per year (\$69.50 — \$20.00)	....	\$49.50
Average additional inventory 1/2(850 x \$0.10)	....	\$42.50
Return on extra investment	....	116% per annum

EXAMPLE II

Item — Spring
Yearly usage — 6,000 pieces
Vendors quotation — 1,500 pieces @ \$0.85; 6,000 pieces @ \$0.65
Inventory policy — 3 months supply

ANALYSIS:

	3 MONTHS SUPPLY METHOD	MOST PROFITABLE METHOD
Quantity	1,500 pieces	6,000 pieces
Total yearly cost	\$5,100.00	\$3,900.00
Yearly savings	....	1,200.00
Average inventory	637.00	1,950.00
Increase in average inventory	....	1,313.00
Return on extra investment (\$1,200 saving on \$1,313 investment)	....	91% per annum

EXAMPLE III

Item — Rivet

Yearly usage — 100,000 pieces

Cost — \$0.0001 each

Variable cost of processing purchase order, including receiving and stores records, accounts payable, etc. — \$2.50 each

Inventory policy — 3 months supply

ANALYSIS:

	3 MONTHS SUPPLY METHOD	MOST PROFITABLE METHOD
Order quantity	25,000	100,000
Costs of parts per year	\$10.00	\$10.00
Yearly cost of order processing	10.00	2.50
Total yearly cost	\$20.00	\$12.50
Extra yearly cost	7.50	....

the \$7.50 saving is theoretical and will not be reflected in a parallel payroll reduction. This would be true if only a few transactions were concerned. However, most concerns of any appreciable size will find, upon analysis, that the volume of such typical transactions reaches sizeable proportions.

Only recently, the Hoover Commission criticized the Federal Government for repetitious processing of picayune purchases. The surprising fact is that many business concerns are guilty of the same inefficiency but apparently are unaware of it.

It is time for management to re-examine its dictates and consider

the adoption of realistic policies whereby quantities are determined in the light of their earning power.

Peculiarly, most concerns have devised practical, hard-headed procedures for evaluating the desirability of proposed capital expenditures. The *Yes* or *No* is strictly contingent upon "yield on investment" or "How long will it take to regain our investment?"

Well, gentlemen, it's the same 59¢ dollar—the best we have—when invested in and earned by inventory. Why have a different policy or, as in most concerns, no realistic policy at all?

Another thought that should be remembered: These short-sighted

policies are costing many of you money on the "other side of the fence"—namely, in repetitious processing of uneconomical, picayune sales of your own products.

Management would be well advised to consider vigorous campaigns to cause their sales departments to discourage this practice. You'll do yourselves and your customers a favor when you point out the poor business economy of present practices. Many concerns would do well to review their quantity discount schedules and revise them in a manner devised to encourage sales in larger municipalities.

American industry has done a terrific job of cost reduction in manufacturing methods, but has a long way to go in the fields here outlined. Solving of these problems should be simple by comparison and extremely profitable. But it will be achieved only when management analyzes its faults, recognizes the shortcomings, and takes vigorous measures to correct them.

The means to accomplish these ends are available. Simple quantity analysis forms, nomograph charts, etc., have been devised to reduce complex formulae to foolproof clerical operations. Yield on investment is quickly and easily determined.

How much return do you want on your money? Free your purchasing agent from the strait-jacket of an arbitrary inventory policy, and let him think in terms of dollars as well as of coverage; throw away the expensive fetish of stock turnover as the only measure, and he can show you profits that you never dreamed existed.

Personalized Reception Folder

It is standard practice for the visiting salesman to identify himself at the reception desk by presenting his name on a business card. It's news—and a pleasantly surprising experience—to have that introduction acknowledged in kind, with a personalized message of welcome, individually addressed.

That is the caller's experience at the Whitney Chain & Mfg. Co., Hartford, Conn. As the receptionist enters the call on the daily register, she takes an extra second to write the visitor's name on a folder and hands it to him. Obviously, it creates more favorable interest to receive a memo that starts out with, "Welcome to Whitney, Mr. Richards", than if it were just another piece of printed matter picked up from the pile.

At the same time, the receptionist on duty introduces herself by writing her own name in the appropriate space below. It saves her from answering to "Miss", "Sister", or "Hey, you". The salesman likes it, too. It adds to the personal touch.

Whitney's welcome folder is simple, neat, concise. It contains the usual information, with a brief note by the Board Chairman that has the ring of genuine sincerity. But the feature that sets it apart from the ordinary run of such documents is the entry that recognizes the caller as an individual rather than merely another robot in the day's routine.



*It takes time, staff, and authority
to do a completely effective purchasing job*

Sure! The P.A. Can Cut Costs, but

By Julian G. Davies

The N. Slater Company Ltd.
Hamilton, Canada

A GROUP of us were sitting around the dinner table at a recent Purchasing Agents Association meeting. One of the men asked, "What did you think of that June issue of PURCHASING?"

"As a means of showing what can be done in reducing costs, it was certainly a knockout," replied his neighbor.

"What bothers me," volunteered another, "is that apparently some fellows are able to put in a lot more time in devising ways of reducing costs than I can. It's a sure thing they don't accomplish it by keeping their noses glued to their desks all day, every day. How do they manage it?"

Further talk brought the admission that all the participants in the discussion were more than fully occupied in attending to matters which constantly cropped up right in their offices, without ranging through their plants and elsewhere seeking cost-cutting opportunities. All of them were employed by companies of moderate size. Each had two or three girls to help him, and two of them had male assistants comparatively new at the job but gradually expanding their knowledge and usefulness.

These experienced heads of purchasing departments stated unequivocally and unanimously that they could contribute much more to the earnings of their respective companies, but reluctantly admitted their inability to convince their chief executives that improved facilities and additional help in the purchasing departments would more than pay for themselves in the cost-reduction studies that would thus be made possible.

With the present-day emphasis on cost reduction, and the belief that a large proportion of association mem-

bers were somewhat similarly situated, it was decided to stage a forum of the interested members to discuss the problem and try to find a satisfactory solution. This was arranged. Three of the members who, in the past, had succeeded in working themselves out from behind the eight-ball of executive indifference were appointed to lead the discussion and present their views.

Opportunities at Hand

The consensus was that few, if any, of our employing companies were large enough to warrant the setting up of a section with the specific responsibility of making a systematic value analysis of materials and components such as had produced spectacular results for some of the huge corporations which have taken that step. It was agreed, however, that our smaller enterprises possessed certain advantages that the big fellows lacked.

One man whose achievements in cost reduction were more than ordinarily impressive stated that he had, over the years, made it a point to cultivate the friendship of workmen in the plant. While his company operated a "Suggestion Plan", with a schedule of awards, for a variety of reasons it had not been completely successful or productive of results. His own factory tours, his investigations of the processing and handling of materials and the use of equipment and supplies, had brought him in close and frequent contact with a large number of factory workers. Discussions with them frequently provided clues to cost reduction through slight alterations in materials, methods of processing or handling, rearrangement of stores, reduction in certain inventory items, disposal of scrap or waste materials, and in many other directions which

might have escaped him entirely had his attention not been focussed on them by the workers' comment. He did emphasize that wherever possible some recognition was given to the workers who had been helpful. Through the factory grapevine, these incidents became known to the workers and their future cooperation was thereby encouraged.

Another of those attending stated that some years ago he realized that with the constant and increasing pressure of his duties, and the resultant worry, he was rapidly degenerating into the condition of a nervous wreck. He decided that, come hell or high water, he would delegate to others everything that could possibly be passed along to them. He did so, and within three weeks was confronted with a small-sized but stirring revolution. One of his assistants walked off the job, and the other two stated emphatically that they would follow suit unless there was an immediate and sweeping improvement in working conditions.

Cure by Crisis

This seemed to afford the P.A. the extra leverage he had formerly lacked. He pointed out to the executive committee of his company, who had previously been anything but sympathetic to his suggestions for additional help, that they were faced with a breakdown of their procurement operations, at the worst possible time, unless drastic improvements were effected. His recommendations, while criticized, were fully even if reluctantly carried out, and within a few weeks everything was running smoothly again, with far less strain on all concerned. The really significant result was that following this episode, any suggestions advanced by the P.A. have

WHERE SHALL I START?



There is little argument but that value analysis and cost reduction are inherent in the purchasing responsibility, and that they constitute a most valuable phase of the buyer's potential contribution to company profits. But in many smaller companies the limitation of staff and the pressure of routine duties make a systematic program of value analysis impracticable. Where, then, can the buyer make an effective start toward improving purchasing performance and realizing the latent cost-saving opportunities for his company?

Here are six practical suggestions:

1. Trouble spots signal the points at which concentrated attention is likely to bring the most immediate and helpful results. Note the recurring complaints, excess usage and waste, bottlenecks in supply or operation, and look for the permanent solution.
2. Remember the transactions which left you dissatisfied. Analyze the shortcomings. Start at once to collect information and take the necessary steps to be prepared to do better on the next requisition.
3. Remember the purchases that gave you a thrill of satisfaction. Why? Perhaps similar techniques can be applied to other items.
4. Concentrate on the items representing greatest dollar volume. Even small unit savings can be multiplied to significant proportions in repetitive purchases.
5. Be alert to good performance by "the other fellow"—on plant visits, in association contacts, in talking with salesmen, and in reading business journals. This is proved performance, and the success pattern may be repeated in your own company.
6. Listen to the man at the machine. He has first-hand experience and knowledge of equipment and materials in use, and he may have some simple, practical suggestions for better, more economical practice.

been accorded the utmost consideration.

A somewhat similar incident was related by another member of the group. This man, with many years of purchasing experience, was invited to take charge of the purchasing department in another company. His investigation showed that the concern had changed purchasing agents four times within six years, the present incumbent was confined in a hospital at the time, methods and equipment in the department were antiquated, and salaries paid the head of the department and his

staff were on a considerably lower scale than prevailed in similar lines of business. Through inefficiency in procurement, continuity of the company's operations was seriously threatened. Apparently the company recognized this situation, but instead of going to the root of the matter they were trying to cure it merely by a change in the purchasing personnel.

After a few days spent in surveying the situation, this buyer told his prospective employers that he didn't need the job—he was satisfied where he was—but conditions

in their purchasing department were so bad that they presented a challenge which was difficult for him to resist. He stated frankly that their chief difficulty was due to "procurement illiteracy" on their own part. They had little conception of the vital contributions that Purchasing could make toward profitable operation of the business, if given the chance. He told them what might be expected after two years of reorganization and stated his own terms—what new equipment would be needed, just what authority he must have, and the salaries they would have to pay, which, in his own case, was nearly double the figure they were then paying.

Having little choice, they decided to hire him on his terms. He has now been working for them for three years, and has never regretted the move. All the detail work is handled by an adequate and competent staff. Aside from a reasonable degree of supervision, and the personal negotiation of a few major contracts, his time and effort are devoted entirely to the devising of constructive policies and ever more efficient methods. His superiors are most appreciative of the altered conditions. They have stood foursquare behind his policies and his authority, and have already substantially increased his rate of remuneration.

Outside Sources Can Help

Another in the forum reported that in his plant important savings had resulted from "farming out" to specialists some of the components which had heretofore been manufactured in the company's own factory. Concerns which concentrated their efforts and production on a particular type of product, with specialized equipment, were often able to produce certain parts for appreciably less money than the plant in which those parts were merely incidental and often a nuisance.

He mentioned a concern whose chief end-product was paint brushes, and which made the steel ferrules in its own plant. Part-time use of machines and dies produced all the ferrules needed, the equipment standing idle the rest of the time. The purchasing agent was able to show that worth-while savings would result from purchasing the ferrules from an outside metal stamping firm, disposing of their own stamping equipment and using the factory space thus gained for more profitable purposes.

This reminded another man of a
(Please turn to page 286)

Is American Industry PREPARED for WAR PRODUCTION?

Already at war in Korea, the United States may now be facing either World War III, or a long and costly series of military engagements in various parts of the world. In either event, American industry may be called upon with relative suddenness to start producing in much greater abundance than now the supplies necessary to the success of our arms. Is industry prepared to meet the demands if they come, and will it meet them in time? We asked purchasing agents, whose important role in the economy would become even more significant during a full-scale war, for their estimates of our readiness to confront new dangers properly equipped for victory. Their combined answers follow.

- 1** Is it likely that your plant will be converted to military production in the event of a prolonged war ?

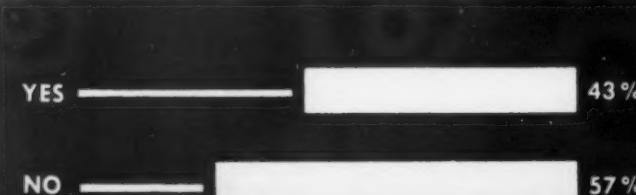


*4% of all respondents said plants would be partially converted.

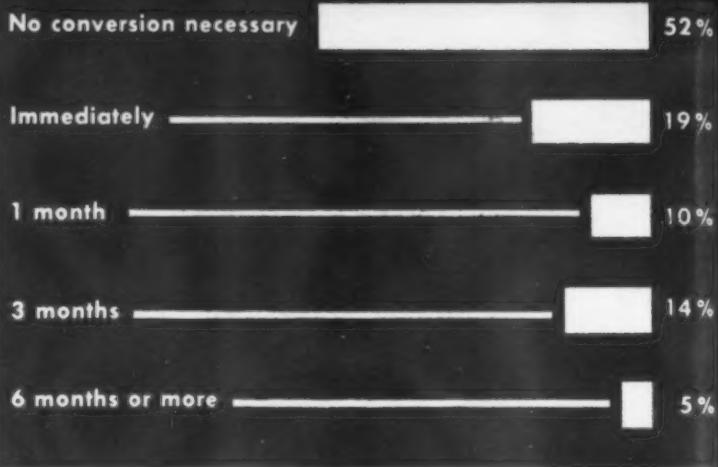
- 2** Does your company have an over-all plan or "blueprint" for conversion to military production ?



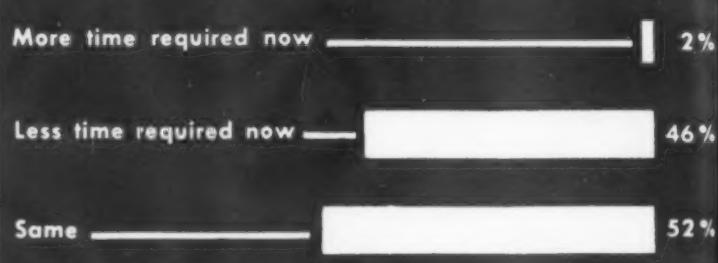
- 3** Had possible military requirements been considered in your buying operations and plans up to the current crisis ?



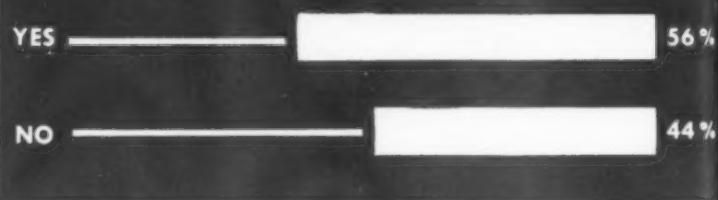
④ How long would it take your company to convert to military production ?



⑤ How does this time requirement compare with that necessary in World War II ?



⑥ Do you anticipate any manpower shortages in the event your industry converts to military production ?



WHAT THEY SAY

"Industry, as a whole, is better prepared today than at the beginning of World War II, and is capable of meeting any crisis provided Government can decide on definite policies and eliminate uncertainties."

"Will probably have same troubles with priorities as before unless Government really cracks down on black market operators and quick. (Thinking specifically of sheet steel)."

"The present challenge is for industry to keep the economy sane by supplying a reasonable amount of military goods and an abundance of civilian goods."

"We favor early controls by Government to prevent hoarding so that all possible critical material will be available for an all-out war effort if needed."

"Priorities worked during last war but were slow and full of red tape. They must be streamlined and speeded up."

"Just busy."

"We've had the experience and the know-how. It would not take us long if the equipment and materials were available."

"Procurement based solely on price has discouraged many an experienced producer who knows his costs. A change in procurement policy will be necessary before the best producers can serve their best."

"Probable that industry as a whole is better prepared for war than in 1941 and 1942, but a weakened machine tool industry and lack of trained manpower will hurt. Great changes must be made in Government . . . we must have decision makers where it is necessary that decisions be made."

"While immediate conversion to military production could be made, present supply of steel on the Pacific Coast would have to be improved. Orders being placed with local steel companies are, in many cases, being filled from eastern warehouses."

"Manpower shortage already in effect in good men."

"Industry in the main is in better shape than beginning of World War II. If the 'brass' will give industry half a chance we will produce and give the boys all they need."

52%

19%

10%

14%

5%

2%

46%

52%

56%

44%

The military, the manufacturer, and the consuming public—all are asking:

Are We Headed for Full-Scale Mobilization and Controls?

By A. N. Wecksler

AT the outbreak of World War II there was frantic recourse to the meager data and industrial experiences of the 1918 mobilization period, only to find that little information was available, and much of what was in the record was inapplicable as the result of two decades of development.

With the exception of Bernard Baruch, there was no one who had direct experience in wartime mobilization. World War II controls

administrators took British, German, and Canadian experiences as a pattern for our own mobilization controls, and through the years of the war these administrators developed a degree of independent technique and skill. Similarly they developed a taste for controls, and their advocacy of industrial and consumer controls has reached into the years which have spaced the end of the war to the current outbreak of new hostilities.

Now a new mobilization is being organized, but instead of a paucity of information about control techniques, and in contrast to the lone figure of Bernard Baruch, there are at all stages in the economy large numbers of people who had a direct

contact with the control machinery of World War II.

Fit Controls to Need

Like the proverbial fire horse, they are all set to go. Priorities, allocations, manpower controls, price controls—all the war experiences which were probed gingerly through the four-year period of World War II, are now the common coin of discussion.

While there is no doubt that the whole fabric of wartime controls would be reinstated in a full-scale war, at this writing at least, such a war is not considered an immediate possibility.

A full mobilization without a full-scale war would leave the econo-

Editor's note: The whole outlook for requirements and supply of military and civilian goods alike is complicated by unpredictable factors. Swiftly changing events may change the picture overnight, perhaps even before this article gets into print. Meanwhile, the Washington Editor of PURCHASING has prepared this round-up of official opinion—military and economic—which reflects the approach to mobilization and controls in the present emergency and indicates the factors which will bear closest watching.

SUMMARY: The experience of World War II controls is of little use at this stage. We are in a different kind of war. Full-scale mobilization before full-scale war entanglement could throw our whole economy dangerously out of balance. Our plans must depend on the plans and time-table of the aggressor. Initial emergency needs are highly selective. Don't count on war orders for priorities and full production. At this point, scare buying and hoarding can deplete normal supplies and inflate prices. Controls may be necessary first to combat these inflationary trends.



Our Desperate Need

Small arms cannot stop an assault spearheaded by modern tanks. Bazookas and other tank-stopping ordnance must be provided immediately for distant combat areas, but this does not necessarily foreshadow complete industrial mobilization for all-out war production. (Photo by U. S. Army Signal Corps)

my dangling in a dangerous manner. Based on this reasoning, the present policy of the Government is mobilization to a degree that would insure preparedness of large scale military operations, without actually putting many millions of men into uniform, and without buying the supplies and arms to equip and supply the 15 to 20 million men who would be military participants in a full-scale war against a major opponent.

The basic question is whether this course spells priorities, allocations, price controls and manpower controls—whether it means shutdown of civilian production—whether it means equipping home defense units, such as was the case under the Office of Civilian Defense.

Similar questions include whether the preparedness phase of mobilization means clamping down on non-essential uses of strategic materials—whether production of raw materials would be in such shapes and forms as are required for military machines—whether the military will purchase sufficient equipment and materiel to keep converted industry busy and at work making defense equipment to replace the present consumer goods production lines—and whether the military is preparing to induct the millions of men who will use and consume military equipment and supplies.

No Time-table Available

There is a further question as to whether a nation that does not intend to launch a war on a specific date can actually afford to mobilize against an indefinite date of attack.

On the positive side has been the figure of roughly \$24 billion for military expenditure during the current fiscal year—representing a \$10½ billion increase over the rate of military spending during the fiscal year 1950.

Still other factors will have a direct effect on materials supplies, such as an accelerated rate of strategic materials stockpiling and a stepped-up program of rearming Western Europe.

In the opinion of Munitions Board spokesmen, the preparedness program will create certain shortages—actually there were shortages of some materials before the outbreak of war in Korea, and the expanded military program will highlight these shortages.

The specific shortages have not, in fact, greatly interfered with the booming construction industry, or the record production of automobiles, or the fairly substantial mili-

tary program of the 1950 fiscal period.

Present view is that some curtailment of civilian production will be necessary to yield the materials for expansion of military production, but that these curtailments will not be severe.

One estimate is that compared with the military take of steel output during fiscal 1950 of roughly 2%, the expanded program would take as much as 5%.

Behind all these doubts as to future developments and questions as to what may happen, is the overriding conclusion that a limited war engagement will not make necessary the whole host of controls which were associated with the end phases of World War II.

The aggressor has the advantage in mobilization as well as on the battlefield. Hitler had a military timetable, and could gear production to that time-table. It is the view of the Industrial War College command that the Reds can choose the time, place and conditions of conflict.

Limited Mobilization Indicated

These factors mean that a full-scale mobilization before a full-scale war entanglement is dangerous to our economy. However, it is generally anticipated that there will be a series of limited wars.

Whether these wars will require setting aside 10% of our productive capacity for military requirements, or a larger figure, is not known. The current estimate in terms of dollars is roughly 10%. In terms of materials, the percentage varies.

Assuming that the theory of continuing partial wars is correct, the effect would not necessarily be to disrupt our domestic economy alarmingly. The British undertook an extended and losing campaign in Greece without extensive military mobilization, and the French have been waging a fairly expensive war in Indo-China without disruption of their economy. Similarly the Dutch became engaged in a long military entanglement in Indonesia without a ruinous impact on their domestic economy.

There is, however, an essential difference in the historic experience of these countries, in that they have been used to administering foreign nations and have a long history of foreign military campaigning for limited objectives. The experience of policing such foreign areas as Korea, Formosa, Japan, and Okinawa is recent to us, and we have little experience with mobilization for such campaigns.

So . . . when a war breaks out in Korea, a manufacturer of metal stampings for home appliances begins to think of the possibility that there may be no materials and no manpower unless he has a high priority. He thinks of getting into war work. The wholesaler thinks in terms of severe curtailment of production, and he starts stocking up. The retailer thinks in terms of price levels. He feels there is no impelling reason to stage clearance sales if he will have to replace the merchandise at a higher cost than his selling price. The housewife buys sugar. The motorist buys tires.

Scare Buying Creates Shortages

This abnormal buying activity in itself creates an economic impact of these buying flurries steps up demand and price, there is on the one hand a demand for controls by the consumer—whose buying actions have created the price rises, and a problem of materials supply to fill the shelves that were depleted by the consumer buying.

The significant fact is that all these developments took place before Congress even considered the additional military appropriations—certainly long before any fiscal 1951 defense money was spent, and much before there is to be any impact of the expanded military program at the materials level.

Based on these factors, the Government took the position that the buying boom and shortages which have been reported in specific items were born of the high wages and easy and available credit—that the boom is monetary, not one created by actual scarcity.

This does not mean that a boom created by consumers rushing to buy with bulging purses or easy credit cannot pick the channels of distribution clean of its finished inventories, and that manufacturers going into the materials markets to buy materials to supply such a demand cannot bid prices up.

At the same time, a flurry of buying and selling tends to surfeit consumer markets. Further, the military demand has not yet reached a high level, nor will it exceed much more than 10% of our gross national product under current planning.

Analyze Military Needs

For the manufacturer who is thinking of getting into war production as a means of insuring materials supply and manpower, the prospects currently are not too bright. In simple terms, such a casual producer is not particularly sought after by

the military.

On the other hand, a manufacturer of bazookas is being crowded to get out all the production possible as a means of combatting Red tanks.

And just as the economics of a limited war engagement are spotty, so are the battle requirements. The ships which used up millions of tons of steel during World War II are still afloat. The small arms of the last war are still intact.

As for procurement, military procurement officers are in no position to place contracts for war materiel indiscriminately. They must conform to the Armed Services Procurement Act of 1947, which sharply limits negotiated purchases.

Here again there are elements of confusion as to what must be purchased under bid and award procedure, and what may be negotiated. While the military procurement officers will be bound by advertised purchase procedure on many military items, a few specific items—again using the bazooka as an example—have been emergency procurements, and purchase has been negotiated.

Where a contract is considered in an emergency category, the military will expedite production in any manner which is considered necessary

by the producer. This means high priorities, if a priority system is initiated. It means specific allocations, if some method of voluntary allocations is instituted.

If none of these expedients is in force, the military will still expedite such emergency procurements, either at the prime contractor level or at any tier of subcontracting.

Actually, priorities as applied against raw materials where a limited amount of materials is involved, is more a formality than an actual order. The producers of steel, aluminum, copper, or any of the basic strategic materials will insure delivery of limited amounts of materials if there are shortages holding up important procurements of weapons.

Non-Military Demand

Under the current concept of military preparation, the military take will not be a large percentage of the total output of strategic materials, but coming on top of unprecedented civilian consumption, the military demands accentuate an already tight supply.

Steel has been produced at more than 100% of rated capacity, but it has been fabricated at a rate which has not permitted accumulation of

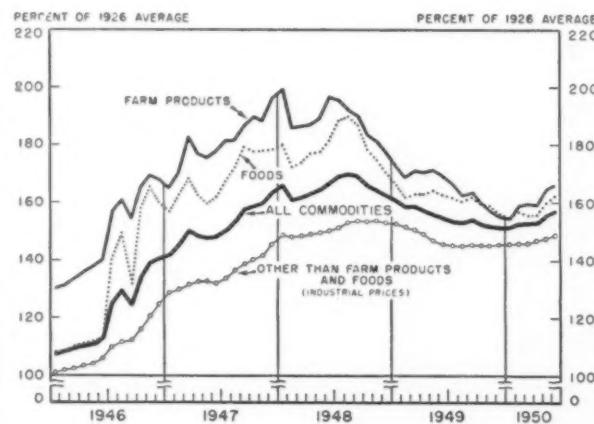
inventory. There has been a tight supply situation in aluminum for some time, and even, in textiles which a year ago were in an economic depression, the industry has been straining in many lines to keep up with demand.

Much of this civilian demand is the result of unparalleled high levels of personal income, and the added Government expenditures for military materials and supply will further boost the income. Unemployment, which has already been whittled down substantially, will continue to decline as men are drawn into military service and military production requires additional manpower.

These are all conditions familiar in a war period, but the dominant factor in the economy is still by far the civilian requirements, not those of the military. We are in the initial phases of an all-out military effort, or perhaps a series of limited engagements, and until our course is clarified, the recollection of developments in World War II is the haziest of guideposts. This is a new war, a different war, and while all wars are fraught with danger and economic upheaval, there is no master plan of events to come or controls to be.

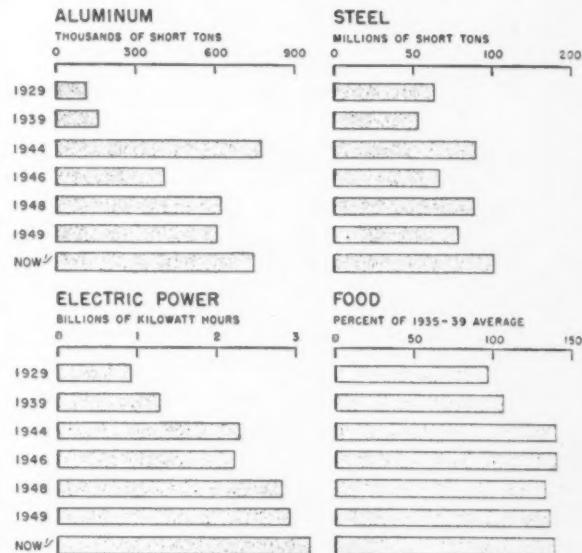
WHOLESALE PRICES

Wholesale prices moved upward during the first half of 1950. The overall rise in industrial prices was moderate, but there were sharp advances for some basic commodities. Farm and food prices rose more than industrial.



SOURCE: DEPARTMENT OF LABOR

GROWTH OF PRODUCTION



SOURCES: DEPARTMENT OF INTERIOR, AMERICAN IRON AND STEEL INSTITUTE, FEDERAL POWER COMMISSION AND DEPARTMENT OF AGRICULTURE.

Our Economic Problem

Prices turned upward in the first half of 1950, before the outbreak of war in Korea. Rising costs, inflation, and top-heavy markets are still our basic economic problems. The impact of war psychology has intensified these problems more than the impact of actual war requirements.

Our Resources—for War or Peace

Production facilities are well above the prewar level, placing the nation in a favorable position for quick conversion to war needs. Civilian demand has been correspondingly high; some of this production must be diverted from civilian consumption to the military program.

Purchasing agents asked us:

What Does it Cost to Spend a Dollar?

One of the questions most frequently asked in respect to industrial purchasing is: "What should it cost to operate a purchasing department, as a percentage of annual purchases?" This is usually intended as a check or measurement on purchasing efficiency. There is probably no definitive answer to that question. However, actual experience and industry averages can be ascertained.

We asked 1,000 representative purchasing agents to make this simple calculation:

Take the total annual cost of operating your purchasing department (excluding cost of stores operation). Divide this figure by the total amount of annual purchases. The result shows the cost of spending a dollar.

Here's what they told us:

11% of the replies reported that no departmental cost figures are available, consequently no answer could be given. Of the remainder, 3 out of 4 (except among the largest companies) had to rely on a reasonable estimate; 1 out of 4 had an accurate cost record. This in itself may be significant as to the importance attached to this approach to the question of purchasing cost, which is a small proportion of material cost, though material cost is a large factor of product cost.

The over-all range of all replies was from \$0.00083 to \$0.095, or from less than 1/10 of 1% to 9.5%. The average cost was \$0.0154. The median figure was \$0.01.

Purchasing costs less in the larger companies

Broken down into four brackets, according to annual volume of purchases, the results are as follows. (55% of the replies came in the \$1 million to \$10 million bracket.)

Annual Purchase Volume	Range of Cost	Median	Average
Less than \$1 million .....	.003 to .095	.02	.028
\$1 million to \$10 million .....	.0014 to .024	.009	.009
\$10 million to \$25 million .....	.001 to .0196	.0053	.006
More than \$25 million .....	.00083 to .0148	.0025	.003

While there is overlapping among all brackets, average purchasing cost in the 4th group (largest companies) is $\frac{1}{2}$ of that in the 3rd group; this in turn is $\frac{2}{3}$ of that in the 2nd group, which is only $\frac{1}{3}$ of the cost among the smaller companies.

What meaning have percentage costs?

The purchasing agent of one of the largest companies cites a single purchase order amounting to more than a quarter-million dollars. "In our business, that particular material is a routine purchase, made with a minimum of time and effort. Even with our large volume of annual purchases, it would throw the averages way out of balance. Here is another

order for a \$900 piece of equipment. If direct purchasing costs were allocated to that transaction, they might run as high as 20% Yet it represents equally good purchasing performance."

Another purchasing agent writes: "Our cost of purchasing is 1.2%. Now try another simple calculation. If I pay twice as much for everything I buy, my cost of purchasing is down to 0.6% but I am doing only half as efficient a job. The prices we pay have gone up, say 10%, over a year ago. My record has improved, percentagewise, through no virtue of mine and certainly with no benefit to the company. If prices should go down, on the same physical volume of purchases and purchasing work, am I expected to cut costs by lay-offs or salary cuts? Percentage costs don't mean a thing as a yardstick."

These comments point up some of the major fallacies in placing too great reliance on percentage costs as a measure of performance. There is no standard capable of general application. For direct comparison, it would be necessary to consider only those cases where the nature and size of the business, and other factors such as prevailing salary scales and cost accounting policies, are comparable. The replies do, however, indicate an area or range which may be considered "normal", and limits that should not be exceeded without questioning.

What Does it Cost to Issue an Order?

Another question that is frequently asked is: "What should it cost to issue a purchase order?" Again the logical approach is to find out what actual experience has been in representative purchasing departments.

We asked for a second set of figures:

Take the total annual cost of operating the purchasing department, as in the question on the preceding page. Divide this figure by the number of purchase orders issued during the year. The result shows the cost of issuing a purchase order.

Reports show wide divergence

The over-all range of all replies was from 33¢ to \$13.30 per order. The average cost was \$3.43. The median figure was \$3.00. The larger companies again showed to best advantage, but the relationship of volume to cost is not consistent, since the smallest companies had the second lowest cost per order.

Annual Purchase Volume	Range of Cost	Median	Average
Less than \$1 million	\$0.33 to \$11.60	\$2.80	\$3.03
\$1 million to \$10 million .....	.74 to 13.30	3.32	3.70
\$10 million to \$25 million	2.06 to 5.50	3.42	3.59
More than \$25 million	1.85 to 4.00	2.22	2.61

Significance of cost per order

The results give credence to the claim that on excessively small orders, purchasing cost is disproportionately high, may even exceed the value of the goods purchased.

Comment: "Office efficiency can help reduce unit costs of issuing orders, but purchasing policy and systems are more important in determining the work load and total cost. Eliminate small orders. Every piece of paper processed sets up a chain reaction of records, entries, and handling, from executive to file clerk. The biggest profit will be in the fact that energy can be spent on constructive rather than routine activities. That's efficiency."

Replacement Repair Parts are Still a Headache

By C. E. Colvin, Jr.
Manager of Purchases, Ethyl Corporation
Baton Rouge, La.

EVERY purchasing department has its own individual problems. What is a splitting headache to one may be a minor irritation to another, so it would be presumptuous to say that the procurement of replacement repair parts for installed process equipment is the toughest and most maddening chore on the purchasing agent's daily calendar. But it is every bit of that in our purchasing department. (It should be emphasized that the data given here apply only to that one category of orders. In contrast, it is the author's experience that all other categories of orders have been accorded splendid handling).

We knew that the situation was bad. Late in 1948, immediately after installing a new over-all purchasing procedure embodying automatic open-order control, our concept of the situation received a shocking jolt. It was not only a few percent of repair parts orders that were giving trouble; the ratio was three out of four. Whereas our suppliers turned handsprings to furnish fine service throughout the overwhelming balance of all the other classes of materials and supplies we purchase, most of our suppliers in the installed process equipment field were giving service that could not, even charitably, be called "mediocre"—it was virtually all intolerable.

Service Still Below Par

A good deal of concentrated effort has been expended in trying to correct the situation, and the question is now raised: "How much improvement has there been?" A resurvey of all orders for replacement parts for installed process equipment placed during the final quarter of 1949 furnishes comparative data to shed light on that question. The results are shown in the accompanying chart.

For perspective and comparison, the first three bars of the chart give the bare bones of what we had to contend with in 1948 to keep round-the-clock operations going in a sizable chemical plant. A militant campaign was undertaken to persuade our fourteen major process equipment suppliers—all of them "blue chip companies"—to improve the situation. The promises were many and, for the most part, sincerely intended. The excuses were many as well—the war and its aftermath, strikes and other labor troubles, slow deliveries on fancy alloys, etc., *ad infinitum*.

Conditions changed greatly during the succeeding eighteen months. By late 1949 there was a distinct buyers' market in almost every line. During the fourth quarter of that year we placed 292 orders for replacement parts for installed process equipment, amounting to a total of \$82,200, or averaging \$281 per order, with these same major suppliers. The chart shows how these repair parts orders were handled.

Obviously there has been a distinct improvement in our deliveries, but in our book the performance is still a sorry situation—23% abjectly intolerable, with another 36% unsatisfactory.

So much for the physical delivery of goods. Let's look at office routines. How did they handle the paper? The main result of our campaign shows up in that 30% of our mail is no longer ignored. We now eventually get an answer, even if the majority of the answers take almost three weeks, on the average, and the average time to get a correspondence reply to follow-up letters was ten days. We still have to do nearly one-third of our follow-up by wire or phone.

We were furnished with a specific delivery promise in 234 cases, or

80%, either on the quotation reply or on the acknowledgment. How reliable were these promises?

In 88 of the 234 cases, at least some portion of the order was received by the date promised: 37.6% reliability.

On the other hand, in 73 cases no part of the order was received within two weeks of the date promised: 31.2% unreliability.

The remaining 73 cases, also 31.2%, were delivered at least in part within two weeks of the promised date. The customer would also class these as unreliable, though the shipper might tend to pass the blame to the transportation agencies.

Stated somewhat differently, the 73 cases of definite unreliability, plus the 10 cases where the supplier failed to give a delivery promise when asked, plus 48 orders that were phoned, wired, or mailed on open order for one reason or another, without exacting a delivery promise—add up to a total of 131 cases, or 45%. Thus on nearly half of all our orders in this category we were in the dark as to delivery from the time the order was placed until it actually showed up on our stores platform.

The Customer's Responsibility

It is not the purpose of this article to indict an industry. Rather, the purpose is to hold up a mirror so that the industry can see itself as it appears to the eyes of the purchasing agent.

Neither is it the purpose to speculate on why the image is so grotesque or to preach what ought to be done. But a few words portraying the kind of service the customer would like to receive may be helpful.

We, as a customer, can not and do not expect the installed process equipment industry to maintain a complete stock of all repair parts in

town as does the automobile dealer. Consequently we maintain our own elaborate stores inventory of replacement repair parts. In our own case, this stock is estimated at some \$750,000 in just the one category in question. This is approximately 10% of the total value of all the corresponding installed equipment, and 1½ times the estimated total of replacement repair parts purchased per year.

Adequate Stock of Parts

Our aim is to have in stock for immediate use whatever part may fail, so that there will be no significant interruption of our continuous operations. In addition, we try to have enough of such parts to meet any reasonable combination of emergencies during the time it takes to replenish our stock from the factory. A machine breakdown or failure of a

part, therefore, seldom if ever precipitates an emergency necessitating a delivery from the factory to get going again. But after such a breakdown, our interrelated continuous operations are vulnerable to any further equipment trouble of similar nature until our depleted stock can be replenished by the supplier.

Three Essentials of Service

As a manufacturer ourselves, with responsibilities to meet sales commitments reliably, we must of necessity—no matter how good our supply service might be—maintain in our own stocks comprehensive repair parts back-up for immediate equipment repairs. Hence, we could fare nicely if our suppliers could simply furnish prompt shipment with normal transportation time in replenishing our stand-by stock.

Three things would be needed to

provide such satisfactory service. All three are now obviously lacking.

- Prompt handling of paper, with reliable delivery information.

- Adequate factory or warehouse stock of replacement repair parts already on the shelf for immediate shipment.

- An arrangement whereby any needed part that is not already on the shelf could be manufactured quickly in the shop.

Need Delivery Commitment

Looking a little more closely at the first condition: if we could rely on an immediate return-mail acknowledgment of such an order, furnishing price and, more importantly, an early and accurate shipping date, we would immediately dispense with the time-consuming and bothersome pre-order quotation correspondence exchange. The only sensible purpose such an exchange now serves is simply that if we do not get some sort of a delivery commitment nailed down before we send out an order, in the large majority of cases we never get any commitment that we can tie to, either for our own planning or to build a fire under a subsequent delivery failure.

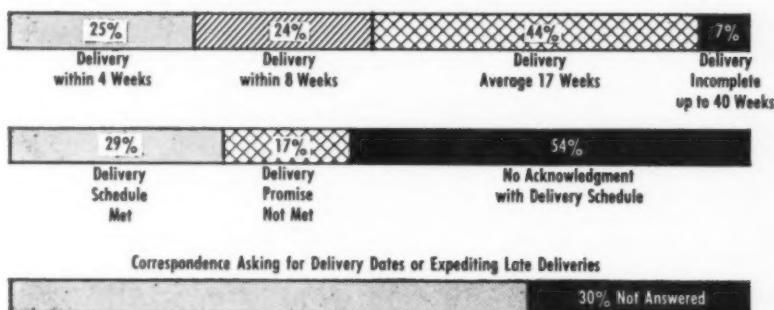
Concerning the second and third points, it is not the customer's province to speculate whether a supplier should maintain 30% or 90% coverage of spare parts for his equipment on the shelf always ready for immediate shipment. But he can hold to a firm conviction that he is entitled to reasonably prompt delivery of *any* repair part he may need to keep the equipment in service—hence, that for any parts the supplier elects *not* to stock for immediate shipment, adequate arrangements have been made for quick shop production.

Dependable Service Essential

Obviously the problem is not one that can be easily solved. If it were, the entire group of reputable manufacturers surveyed would not be almost equally lacking. But sooner or later some *installed process equipment* company's chief executive is going to make a desk-thumping demand that his service be brought up to a par with his fine design and engineering. We can only hope the first shots in Korea did not signal an indefinite interruption in the prospect for a solution but, rather, that it signals the necessity to get our houses in order to remove the production handicap of replacement repair parts delivery delays.

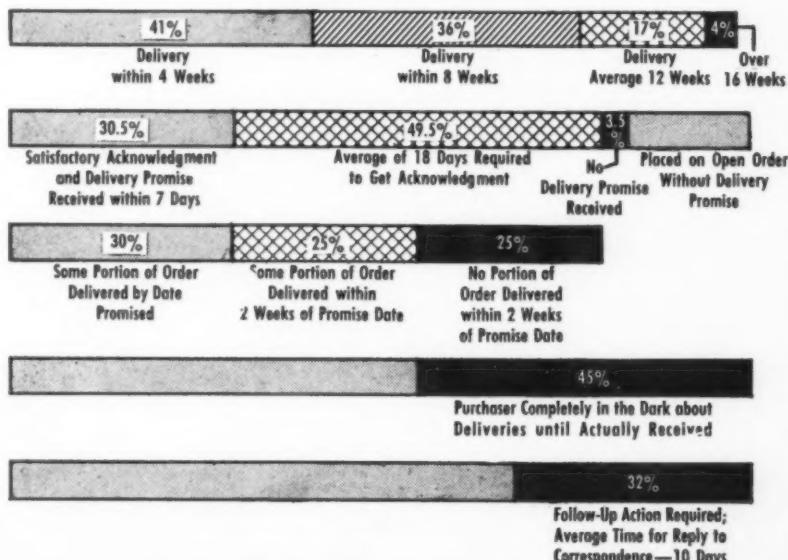
THE SITUATION IN EARLY 1948

203 Repair Parts Orders placed with 14 Major Suppliers of Installed Process Equipment



THE SITUATION IN FOURTH QUARTER OF 1949

292 Repair Parts Orders placed with the same 14 Suppliers
393 Separate Deliveries



There's know-how in handling scrap materials, too

Getting Maximum Net Return in Scrap Disposal

By George L. Duke

Headquarters Purchasing Department
Westinghouse Electric Corporation
Pittsburgh

DISPOSITION of scrap should be recognized by purchasing agents as an important avenue for developing greater profits for the companies they represent. A potential gross revenue exceeding 10% of the net profit of the company is not unusual when scrap is handled efficiently.

The following questions must be answered by the purchasing agent before selling scrap if the greatest profits are to be realized:

1. Is scrap segregated at the points where it is created?
2. Are storage and preparation facilities adequate?
3. Is scrap being prepared to the point of greatest net return?
4. Is full advantage being taken of quantity premiums by shipping in carload lots when feasible?
5. Is competition among buyers encouraged?
6. Is the present method of sale the best method with the correct choice of outlet?
7. Is the company adequately protected from financial loss or incorrect weights?

Segregation and Storage

The proper place to obtain segregation is where the scrap is generated. At this point the additional cost is negligible; but once mixture or contamination has taken place, the cost of segregation often exceeds the worth of the scrap. The economics of keeping copper separate from steel or brass from aluminum seems obvious, but the amount of material sold in these or other combinations is surprising. Unfortunately, such mixtures are worth even less than the lowest valued item contained therein when sold separately. Perhaps not so



Segregating waste paper by standard paper mill grades adds value; baling it still further increases its value.

obvious is the need for keeping separate different types of the same commodity such as steel—tool, stainless, carbon, and silicon; or paper—newsprint, corrugated, kraft, and blueprint. But when we note that carbon steel may be worth \$30.00 per gross ton, whereas some tool steels may run as much as \$750.00 per ton, we can see the reason for the importance of proper segregation of scrap.

Assignment of plant area for storage of properly segregated grades of scrap should depend on requirements rather than space remaining after other manufacturing operations have been accommodated. Covered space may be unnecessary for ferrous scrap, but either because of inherent value or loss of value if exposed to the weather, most scrap should be accumulated in a building which will protect against both theft and climatic conditions.

Grades and Preparation

Maximum value is given to scrap when prepared in accord with recognized grades or standards. The specifications for iron and steel scrap

as written by the Department of Commerce and subscribed to by the Institute of Scrap Iron and Steel are recognized as standard, but are in need of revision. The National Association of Waste Materials Dealers have recently revised non-ferrous specifications and have standards for other types of industrial scrap as well. The respective trade associations, through their national headquarters, will supply these specification lists on request.

Maximum preparation is not always economically justified, however, for in some instances the additional value imparted in the process of preparation is not equal to the cost of so preparing. One company is currently selling its unprepared plate scrap at \$4.00 per gross ton less than the bid price on prepared plate. The average preparation cost to reduce this plate by burning or shearing to conform to specification for prepared low phos plate exceeds \$5.00 per gross ton. It is therefore to the advantage of this plant to take \$4.00 less for all but the most easily prepared portion of this item.

At another plant a local dealer was purchasing unprepared scrap and preparing it to standard specifications for local mill consumption. Another dealer found a use for this scrap in an "as is" condition, and even with an added freight charge of \$3.00 per ton, can net a brokerage profit and provide this plant with additional revenue of over \$2.00 per ton. The increased revenue amounts to \$1,000 per month on 500 tons. Accumulation and preparation are, in nearly all cases, a function of some department other than Purchasing, but the counsel of Purchasing should have considerable influence because of the bearing on the net return.

Quantity Premiums

Sale of scrap in carload quantities is economically desirable, but probably not practical in many instances. Even the largest manufacturing plants, which sell thousands of tons of scrap each month, often have a requirement for some trucking of smaller lots and for clean-up purposes. It should be recognized that the trucking of scrap from an industrial plant means extra handling and additional hauling charges in nearly every instance. Scrap trucked from a plant will lose approximately \$2.50 per ton in value recovery in this operation. This expense on a percentage basis may not be too important when considering copper or brass scrap which has a high inherent value. However in steel scrap this charge may represent a reduction of 10% in its return to the seller.

In addition, and probably more important, is the loss of control which develops in a trucking operation. The opportunity for deception and fraud is greatly compounded when trucks are used. If you must dispose of scrap in less than carload quantities, every precaution should be taken to assure correct weights, proper loading of the grades of scrap as sold, and careful supervision during the entire operation.

Do not lose sight of the fact either, that refiners of copper and brass mills pay premiums for carload quantities. A carload offering will create much more interest among scrap brokers than will occasional truck-load lots. Also, less frequent sales of larger quantities will justify more attention by the purchasing agent. Truck quantities of number one heavy copper scrap, as an example, usually sell at about the dealer's buying price. Shipment of a carload of like material through a broker should net the seller a total

premium of three cents or more, for an added revenue of \$1800.00 on a single car, when all factors are considered. Use of non-ferrous scrap in illustrating this point perhaps magnifies the potential savings available through carload shipments. On steel scrap it can be demonstrated that savings can aggregate \$150.00 per car or more through such sales methods.

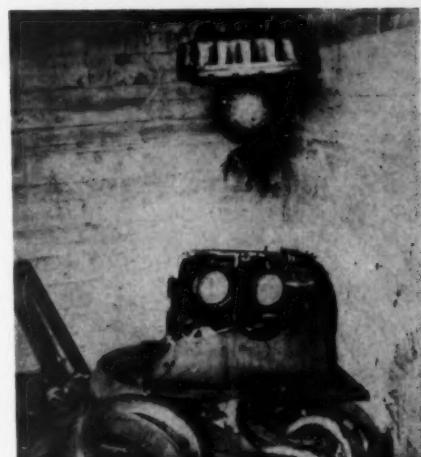
Encourage Competition

Why is it competition, the life blood of purchasing, is many times disregarded when scrap is being sold? If you question that this condition exists, we suggest that you investigate your present sales program. Has the same dealer or limited group of dealers been the buyer of your scrap for an extended period? This is the case in many industrial plants.

To maintain and encourage a competitive atmosphere, dealers must be made aware of your intention to sell to any qualified bidder be he successful. It must be made clear that no one dealer will be provided with an opportunity of meeting all bids. Unless this point is understood by all, any competitive quotes will be but a token bid, and your regular outlet will have no cause to extend himself. It has been observed that dealers are not prone to disturb an allocation of available industrial scrap for fear of instigating a price war among themselves.

Sales Methods

Scrap can be sold either by short-term or long-term contract, by bid,

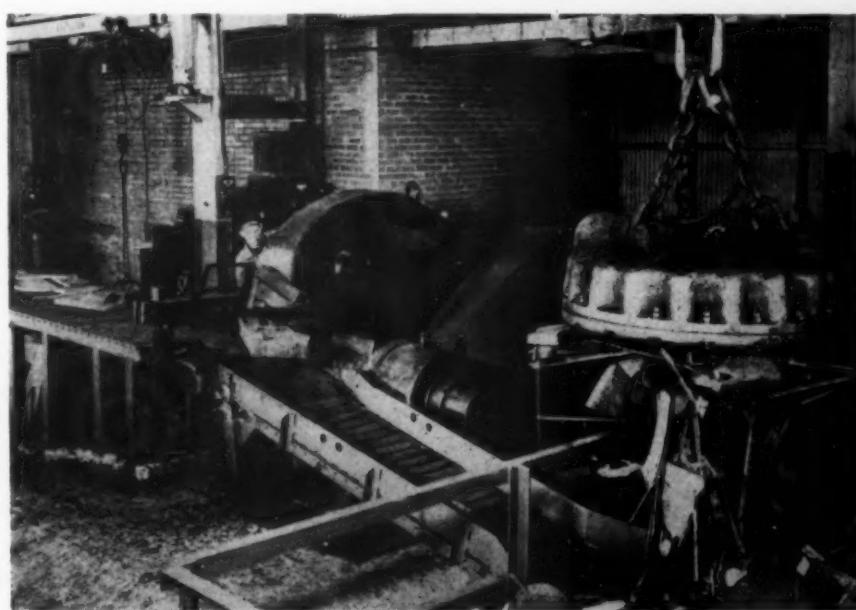


Reduction of cast iron to foundry size is an inexpensive operation.

or by negotiation. Each purchasing agent must establish a program best suited to his needs. Whereas an annual contract is preferred by some producers, others sell by monthly bid. The railroads and automobile manufacturers are in this latter category. Annual contracts have the advantage of establishing a price basis at the outset, with top management attention needed only once a year. Actual sale price is then a reflection of the market as indicated in a recognized trade paper.

Negotiated sales should be shunned unless your personnel is well informed on the basic value and the various markets for the material being offered for sale.

The actual tonnages of scrap available for sale are not as important a determining factor for establishing the method, as is the type of



In processing scrap, be sure that additional cost of handling does not exceed the extra revenue obtained.



Electromagnets handle steel scrap fast and efficiently.

scrap. Contracts are particularly well adapted to disposal of uniform grades in either truck-load or carload quantities. The bid basis for sale is almost a necessity when segregation is such that the material varies from month to month as to quality. Scrap of this type must be sold on an "as is" basis, and creates a degree of speculation for both the buyer and the seller.

Requests to bid on scrap accumulations should be circulated widely enough to assure a fair indication of the market.

The seasoned purchasing agent will readily recognize the artificial bid submitted as an entering wedge. The dealer may use this artifice with the expectation of a major re-

When steel and non-ferrous scrap become mixed, a magnetic separator is the standard method of segregating them.



coup on later sales once he becomes established. All purchasing personnel are familiar with this tactical maneuver in reverse when a supplier endeavors to "open an account" by quoting under the market.

Another practice more difficult to cope with develops when several items are offered on one bid list. The bid for a known and trade-paper-listed grade such as number-one heavy copper scrap may be at a very fair price. The offer for mixtures which can not be checked against a market quotation may be extremely low. Better segregation and an actual determination of metal content will assist both you and the dealer in arriving at the correct value in this instance.

Financial Considerations

In acceptance of bids, not only the highest offer must be considered, but also the integrity and financial status of the prospective buyer. It is common practice to obtain advance payment for scrap material. Some dealers and brokers will deposit cash with an industrial firm sufficient to cover two weeks shipment or more, and then maintain this balance by paying on the basis of cash upon presentation of invoice. This method assists in maintaining regular accounting practice, and obviates the necessity of cash payments to the salvage personnel, or others not customarily handling company's money.

Direct vs. Brokers

Shipments of scrap direct to consumers, who are usually suppliers of the raw material, can be invoiced safely with the treasurer's approval on open account. This brings up the ever recurring question of the proper channels through which scrap should flow. There is no general agreement, nor could there be with the variety of materials and circumstances as to the necessity of middlemen in the scrap picture.

The writer recalls an instance of accumulation of a large tonnage of a special grade of steel scrap which one of the largest scrap brokers in the United States would take only at a substantial discount from the market for number one heavy melting scrap. Scrap buyers at two different mills were approached and the going price for this material was obtained. Such an example certainly raises a doubt as to the economic justification for a broker's fee which varies from fifty cents to \$1.00 per gross ton.

On the other hand, it was a broker who came to Purchasing and indi-

cated the method of obtaining additional revenue from unprepared scrap in the example mentioned earlier. It is the wide knowledge of all possible outlets which earns for the broker his commissions. They, as a general rule, have a number of customers, and as scrap buying is sporadic, they can assure an even flow of material from the generating plant. Most plants are limited in scrap storage facilities, and a dependable broker or dealer who will take material during good times and bad is an important asset.

The dealer, as opposed to the broker, is the accumulator in either carload lots or truck-load quantities. He collects, segregates, and in most cases sells to a broker who has the larger order for mill delivery. This does not mean that there is a sharp line of demarcation, for many brokers also have yards, though in competing for dealer tonnage this fact often reacts against them.

Another phase of direct shipment involves the return of scrap material to the manufacturer of the new material for conversion to additional new material. This program is particularly lucrative in the return of nonferrous metals such as brass mill scrap, solders, silver scrap, and other like materials, which can be kept clean and uncontaminated during the manufacturing process. The conversion method nets a return comparable to or possibly more favorable than the top price paid by the mill for like grades of scrap, and can best be handled by direct contract.

Mixtures of metals, if shipped direct to a mill or refiner, will be either entirely unacceptable or, as in non-ferrous scrap, will be accepted only on a copper recovery basis. The dealer is in a position to take this mixture, sort it, and make it into acceptable grades, thereby permitting him to pay you more than could be obtained on a direct mill shipment. He performs a service which would not have been needed had the scrap been segregated at the source.

Disposal of scrap is not an exact science, though progress in bringing the industry to one of recognized stature has been noticeable during the last several years. It is logical that Purchasing should have the responsibility for this activity. This department is familiar with raw materials and their specifications. Purchasing agents are trained in the field of negotiation. They have access to the physical requirements for providing interviews, investigating credit, and determining markets and freight rates.

Inventory reduced by 38%

Inventory Controls Belong in the Purchasing Department

By Leo A. McPherson

Is management overlooking the purchasing agent as a responsible executive to help control that nightmare of management problems—inventory? If so, Herbrand Division of The Bingham-Herbrand Corp., Fremont, Ohio, can testify it's missing a good bet.

Under the direction of W. P. Hellwig, Purchasing Agent for this Ohio manufacturer of tools and forgings, stores inventory has been reduced approximately 38%. "We'll reduce it even further," Mr. Hellwig reports. "Some items now in stock are obsolete to us because of changes in manufacturing processes. We'll dispose of as many as possible to other divisions of the company; others we'll convert to cash. We hope to reduce housekeeping inventory—supplies, tools, small equipment—by as much as 50%."

This writer found that Hellwig had two fundamental weapons responsible for this happy condition—information and authority. About a year ago the company inaugurated a method of stores inventory control which produces daily reports placing the Purchasing Department in control of the situation. And an alert Herbrand management wel-

comes an operation that releases loafing dollars.

The Herbrand picture is in sharp contrast to that in many a plant where a conscientious, competent purchasing agent is forced to okay routine department head requisitions for the lack of information to challenge the need of the purchase. Yet, many a foreman and department head who holds such authority to tie up badly needed dollars hasn't read a trade paper in years; has few channels of information on new products, materials and processes. Too, many managements overlook that inventory is many things—raw materials, goods in process, finished goods, and supplies needed to carry on the operation. A dollar tied up in surplus lamp bulbs is just as inactive as money "invested" in slow-moving finished goods.



W. P. Hellwig, Herbrand's Purchasing Agent, has exact and detailed information of stores inventory at his finger-tips.

At Herbrand, as the new stores inventory control and experience establish usage, purchasing of many of the 2,000 items carried is automatic—completely in the hands of Mr. Hellwig and his associates. That procedure followed when the new control method turned up the fact that a three- to six-year supply of items on hand was not uncommon. One minor stock item was found to be in over 100 years' supply!

"If that one brings a snicker, let it," challenges Herbrand's P.A. "Apply our modern controls to the average plant and you'll find more than one 'buggy whip' item in the bins."

The unorthodox part of the Herbrand plan is that all supply inventory control records are kept in the Purchasing Department and are under the authority of the P.A. It's

Two simple recording devices provide up-to-the-minute information for positive control over all inventory items in this system.

1. A requisition form with marginal code and punching to identify each stock withdrawal and permitting automatic selective sorting for reference.

2. A collating board for simultaneous entry of data on stock ledger cards and daily activity journal, thus eliminating duplicated effort, the possibility of omission, and errors of transcription.

Result: A complete and current record of usage, requirements, and stock balances, that brings the flow of materials, shortages, and surpluses to the attention of the purchasing agent responsible for keeping inventories in line with requirements.



Gail Keever, Mr. Hellwig's assistant, enters a transaction on both ledger and journal at one writing by means of an ingenious collating board.

odd that the procedure should be considered unorthodox since it is so logical. The "end result" of the method is a daily activity journal which keeps Mr. Hellwig constantly informed as to withdrawals, balances on hand, minimums and maximums. The latter can be intelligently adjusted as usage changes the picture. By his daily activity journal, the purchasing agent is able to keep adequate stock on hand to meet requirements, but at the same time is able to prevent useless surpluses from piling up. The journal is the instrument which permits Herbrand to report such profitable results from its new plan of stores inventory control.

The method which has thawed Herbrand dollars out of useless inventory is simplicity itself. The forms consist of a Keysort requisition card, a ledger card for each of the individual items, and the above mentioned journal to record daily movement of usage, requisition and balance on hand.

The requisition is Keysorted for the benefit of Accounting in charging the multitudinous material withdrawals to the proper accounts. With this feature it is simple to sort the requisitions by department, part or stock number and account. It works this way: For example, a bracket of holes around one edge of the card is reserved for department numbers. If a requisition is to be charged to Department 7, it is so noted on the face of the card, and later hole 7 is punched into a V-like slot. In sorting for departments,



A foreman presents a requisition card to the Storeskeeper for the issue of an inventory item. This original entry is the key document for the record.

the operator inserts a steel needle with handle through that hole, lifts up and all Department 7 requisitions, being unsupported at that spot, drop out. In similar easy fashion requisitions are sorted for part and account number.

W. J. Kayden, office manager, is inclined to applaud the method for that feature alone. "It greatly facilitates Cost Accounting," he tells us, "minimizes error and speeds up the entire operation."

But Hellwig, with the purchasing viewpoint in mind, is fond of reporting incidents that have brought about that healthy reduction in inventory. For example, the daily

inventory journal indicated it was time to order 8" abrasive wheels. True, the item was in short stock, but on hand was a surplus of 6" wheels. Couldn't they be used? Sure enough, investigation showed that a minor adjustment on the equipment made the surplus wheel just as useful.

G. E. Keever, assistant to the purchasing agent, explains the simple operation of the plan. A bin card for each item in the stock room reflects the movement of any stock number: the number withdrawn, received, and the balance on hand. A Keysort requisition to the stores helper is written by the foreman as withdrawals from stock are made.

In entering stores requisitions, purchase orders or shipments received, Mr. Keever uses a McBee Collating Writing Board, which makes possible the creating of the ledger and journal entry in one

writing. Keever selects the ledger card which corresponds to the stock number on the requisition. He places it on the writing board, with the line on which he is to make his entry opposite the center peg on the board. Underneath is the inventory journal and a carbon. His entries differ, of course, depending upon whether the recorded transaction involves a withdrawal, a purchase made, or a shipment received. But common to the ledger and journal are: purchase order number, price, terms, quantity received, average monthly use, quantity issued, balance on hand, and minimum requirement. Whatever entry is made

becomes common to both records. After the recording, a knurled knob at the side of the board is moved on a ratchet. The journal moves up one line and is ready to receive another entry.

No purchase requisition at Herbrand gets an automatic okay simply because the P.A. doesn't know what else to do. Those daily inventory journals furnish Mr. Hellwig with a continuous report of what is going on in stores inventory. On the journal are symbols which warn the Purchasing Department that certain items still are in surplus and should be reduced. Others are symbolized as doubtful. Either some other stock item will serve or monthly usage can be reduced.

Mr. Kayden points out another plus value of the plan from Accounting's viewpoint. "It gives us a chance to check quarterly against book value and actual inventory.

We're getting more and more agreement between ledger card balances and actual count. The very fact we have modern controls and are showing so much interest in stores inventory has a psychological effect on the employees who use the supplies."

Mr. Hellwig believes the average P.A. will like the fact that Herbrand's plan eliminates the vendors' record, which is incorporated with the inventory ledger. Unlike the average vendors' or reference file, Herbrand's inventory ledger is accurate and up to date. Every time a purchase is made and entered into stock it must be posted. The several vendors of the item are listed together with a running history of the stock number; purchases, disbursements, receipts, usage, price, method of shipment—all on one record. There's no necessity of making reference to purchase orders or a led-

ger file kept in another department.

Is Herbrand overemphasizing stores inventory control? Not at all, for the Ohio concern realizes that the average plant has four and a half times as much money tied up in inventory as cash in the bank; that often the book value of material and parts in a stock room is comparable to the figure in the company's bank book. Yet firms employ treasurers, comptrollers, auditors and a staff of employees to guard its cash. A \$100 shortage means burning the midnight oil to find the error. A similar shortage in the stock room is often "just one of those things."

Nor is Herbrand neglecting other phases of its overall inventory position. The forgings side of the business is relatively simple to control. Steel is the only raw material and that commodity is still difficult to buy, with little danger of oversupply. Herbrand buys steel as orders are received from customers and ships as soon as the forgings are ready. There is no inventory of finished goods.

But the concern also makes and markets an extensive line of high-quality hand tools. An inventory control for tools, similar to the stores plan, is now being put into effect. The same Keysort card will record the original transaction of movement in or out of stock. And a Collating Writing Board will record ledger and journal entry at one writing.

As top executives meet in the conference room to tangle with the profit-reducing problem of inventory, maybe someone will suggest: "Give the purchasing agent a chance to help. Don't make him unwillingly add to the problem with routine okays for anybody's purchase for anything at any time."



Periodic spot checks are made to determine whether bin count agrees with ledger card record. Accuracy has improved substantially under the new system.

The method is revealing shrinkages that we didn't know existed."

Since the Keysort requisition is posted with the balance on hand every time an issue is made, there is opportunity to compare bin count with the inventory ledger balance. Discrepancies can be checked immediately, cutting down by gradual process the differences between actual and ledger counts. Adjustments at annual inventory time are at a minimum.

Mr. Hellwig tells something of the tightening up process which good information has made possible. "Gail (Keever) makes spot checks of bins. He finds discrepancies, but

The requisition form, Keysorted so that the Accounting Department can quickly sort and distribute charges to the proper account from the original record.

MATERIAL REQUISITION HERBRAND DIVISION BINGHAM-HERBRAND COMP.		DATE 9-21-50	DEPT. NO. 21	PART NO. OR STOCK NO. 1114	QUAN. ORDERED 1	QUAN. WITHDRAWN 10
MATERIAL DESCRIPTION <i>1/2 in Tool bit</i>		C2011/G BIN CARD BALANCE				UNIT COST 66
MACHINE NO. DIE NO. ACCOUNT NO. CHARGE TO 2122		FORM NO. 575-B				AMOUNT
FILLED BY K		CLOCK NO.				AU. INSCRIBED SIGNATURE <i>C. Hardy</i>
ON 63000 15402 ON 210 - ON 210 - ON 210 - ON 63000 0014						

Responsibility for Materials . . . Top Management or Technical Management?

By Stanley E. Bryan

Associate Professor of Business Administration
Michigan State College

LACK of materials or components makes an airplane a "duck". This is the derisive designation conferred by the airframe industry upon an incompletely aircraft. Such a duck might have 75,000 man hours in it, yet must be taken back to the station where the material or component was short or have extremely expensive yard work expended upon it before it can fly away. Bitter experience with the cost of ducks has caused companies such as Convair to insist that airplanes be stopped on station if a component is missing. (See *Fortune*, September 1949, p. 134.)

Continuity and rhythm in supplies was noted years earlier by James D. Mooney, then head of the General Motors Overseas Division, when he rode over to Flint to look at the Chevrolet production line. His classic comment was: "Just an orderly flow of material." It is significant that the organization he directed was subsequently organized

into four equal divisions — supply, manufacturing, sales, and finance. (See E. Petersen and E. G. Plowman, *Business Organization and Management*, p. 269.)

The genius behind the orderly flow of materials at Chevrolet at that time was William Knudsen. Purchasing people can find interesting reading in Norman Beasley's *Knudsen—A Biography*, p. 48 and following. This book describes Knudsen's first official call as "boss of Chevrolet". That call was made on the purchasing agent. Imagine one of your salesmen suddenly becoming your boss. Imagine his asking you if you keep a pair of scales in your office!

Knudsen tied up in his mind the three functions of production as being (1) procurement, (2) follow-up, and (3) making. He recognized the importance of purchasing officers' activities long before such executives were generally recognized in industry. He realized that each of his three production functions had to be handled in the proper manner if effective production were to take place. The "proper manner" did not in-

clude huge amounts of working capital tied up in materials inventories. Previously, large stocks of raw materials had been looked upon by production men and company administrators alike as insurance against shortages. But the period of "profitless prosperity" in the early 1920s, with accompanying inventory losses and turnover of management personnel, had proved the fallacy of such practices. Knudsen saw in the purchasing officer an executive who could save a great deal of money and facilitate the effectiveness of operations because he was better informed about the company's requirements, better versed in supply activities, and specifically responsible for supply.

"Inventory control" was the order of the day during the late 1920s, when buying was generally on a hand-to-mouth basis. Then World War II shifted the emphasis again to "procurement", with expediters as the miracle men of materials. This shifting shows that emphasis changes from time to time. However, the basic fact remains that materials supply is one of the most important phases of production. Manufacturing companies find themselves torn between the dilemma of too much capital invested in inventory on the one hand and costly line stoppage or equally costly "ducks" on the other. The man who is charged with the responsibility of supplying the right material to the right place at the right time, and doing it economically and effectively, is more than a competent technician.

From time to time, articles or discussions are found in which the purchasing officer refers to the "Management" of his company as a distinct entity outside his own domain. Such men probably look with pride upon their buying ability just as all technical people should look upon their accomplishments as specialists — the engineer in good design, or the planner in good routing, and the

FUNCTIONAL ANALYSIS AND SCOPE OF RESPONSIBILITY

Management	Materials Management
Men	Personnel, training, supervision, vendor relations.
Machines	Capital equipment policies and procurement.
Money	Purchasing budgets; inventory control.
Methods	Purchasing procedures, policies, and techniques; research, specifications and tests; coordination with other departments.
Materials	Purchasing; follow-up; stores; salvage and surplus disposal; materials accounting.

buyer in good buying. However, the way for advancement of persons and of the profession lies in the direction of broader administration, and not in the direction of increased technical specialization. How many times has a technical specialist looked over the confining walls of his specialty, as into a Paradise, and regarded his reputation for competence in one particular line as being almost a disaster to him?

Surely no right thinking critic would minimize the art and science of pure purchasing. But the executive charged with materials supply is broadening the scope of his activities. His usefulness in the planning, organizing, and controlling of his company's activities are being increased.

Purchasing, by definition, is to obtain by paying money or its equivalent. Yet in most companies, purchasing officers have broader power than that. The title "Purchasing Agent" is considered a misnomer by

some, especially if they are acting primarily as administrator, and not as buyer. The term "purchasing" is not completely descriptive, for the purchasing responsibility goes beyond the single act of making the purchase.

Procurement, by definition, implies the purchasing of material, or securing it by any other means possible — making, begging, borrowing, or stealing. The verb *procure* is defined as "to bring into possession; to obtain by any means." It is thus generally accepted as a broader term than "purchasing" and describes the type of activities necessary during the war period. However, it is not always accepted in this broader meaning. Sometimes it is found to refer to a more specific group of activities related to the internal production function or expediting — being thus considered as a part of the larger function of purchasing, rather than connoting purchase *plus*.

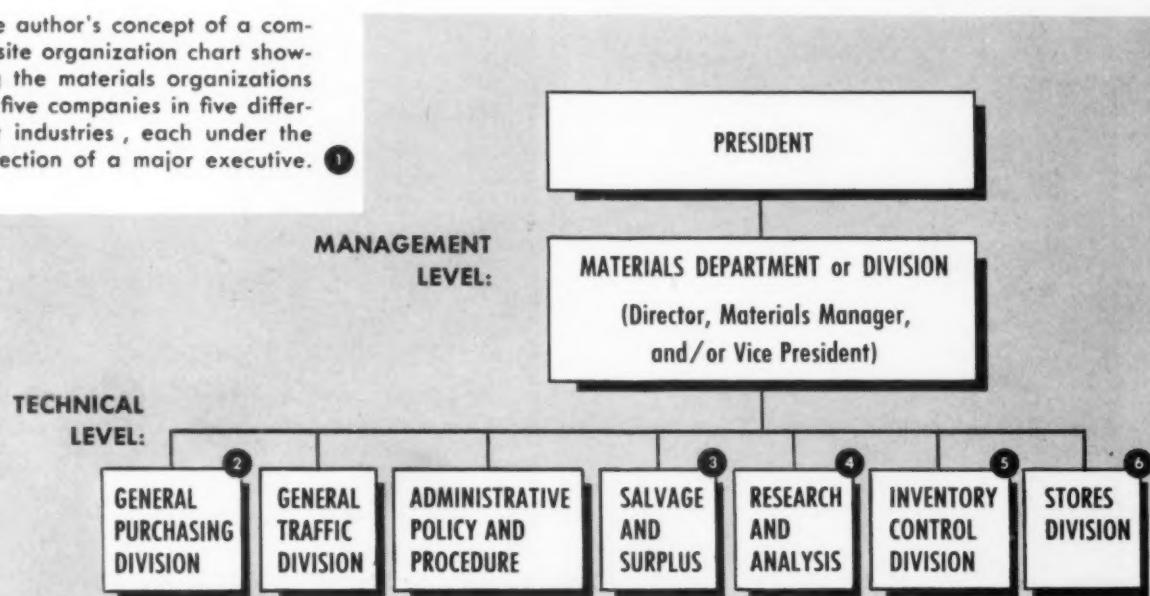
Materials Management, by im-

pplied definition denotes definite management responsibility — the planning, organizing, and controlling of materials and their flow into production. The emphasis might shift from tight inventory control at one time to intensive procurement at another time. It would need expert purchasing at all times. But no matter what the particular emphasis might be, it is always the management of materials — to have materials where they are needed when they are needed, and to circumvent such production monstrosities as the "ducks" of the airframe industry.

The planning phase of materials management includes a scientific approach to the prediction of the supply situation. In larger organizations it is now common to find distinct organizational units dealing with market statistics, market analysis, market information, or market economics. But even in smaller organizations where the purchasing officer

(Please turn to page 280)

The author's concept of a composite organization chart showing the materials organizations of five companies in five different industries, each under the direction of a major executive. ①



- ① This chart is based on the materials divisions or departments in North American Aviation; Detroit Diesel Division of General Motors; Gunnison Homes, a subsidiary of United States Steel Corp.; R.C.A. Victor; and American Airlines.
- ② Called "Procurement Division" in one company.
- ③ Variously called "Salvage Sales", "Surplus Disposal", and "Surplus Coordination".
- ④ Includes Market and Commodity Research and Component Cost Analysis.
- ⑤ Includes Material Planning in two of the companies.
- ⑥ Includes Receiving, Shipping, Warehousing, and Handling in various of the companies. In one case, Stores is not included in the Materials Management Division.

Coordinating Purchases and Deliveries

Accurate schedules must be maintained for efficient construction and installation

Manufacturing division is regarded as one of many vendors on overall project

Complete job descriptions help systematize procedures and fix responsibility

• By Fred M. Burt



OWEN W. GAUDERN
Manager of Purchases, Fluor Corp., Ltd.



C. F. ZIMMER
Assistant Manager of Purchases

SCHEDULING and coordinating the deliveries of all materials and purchased equipment is a particularly important phase of procurement wherever major construction work is involved. It is a matter of first importance in the purchasing operations of the Fluor Corporation, Los Angeles—"Engineers, Designers, and Constructors of Equipment for the Gas, Oil, and Allied Industries." It is a responsibility that starts with the handling of the

original specifications or requisitions, and carries through the stages of obtaining quotations buying, and expediting deliveries.

Projects which make up this company's business may range from the relatively simple construction of redwood water cooling towers, on up to a job like the 15-million-dollar refinery recently completed for the Carter Oil Company in Billings, Montana. Delays caused by lack of materials or by late deliveries can

be exceedingly costly, even disastrous, on such an undertaking. On the other hand, smooth flow of materials and jobs completed ahead of schedule lower construction costs and allow the customer to derive an earlier benefit from the large investment. Just 6% on \$15,000,000 adds up to some \$2,500 per working day.

To coordinate is defined as "to place or arrange in due order or proper relative position; to combine

Job Schedule and Progress Report records every phase of a project, including purchases and deliveries. The complete form measures 30x11 inches, and has 76 weekly columns to cover project time up to 18 months

in harmonious relation or action." Happy are Purchasing, Manufacturing, Constructing, and Accounting, when this due order and harmony are maintained. After the lusty baby is born through the signing of the contract by the customer, Owen W. Gaudern, Manager of Purchases, and his organization get the job of feeding the infant for growth to full maturity.

This feeding is guided and recorded on a Job Schedule and Progress Report, showing the coordination of every operation, from engineering and drafting, through order placement, scheduled shipment by vendor, actual job-site delivery, to erection and installation.

The volume and complexity of Fluor Corporation's procurement is evidenced by the fact that it amounts to about \$20,000,000 per year, with about 1,000 purchase orders issued each month, some of them running to five or six pages of listed items.

The company has two divisions, Construction and Manufacturing. The major items manufactured by the latter are fin-fan cooling units for gas and liquid; pulsation dampeners to eliminate vibration in pipeline transmission; mufflers for compressors and other engines; gas

cleaners (liquid and solids removal types); and diverse units of piping, fabricated to a great variety of specifications. The big cooling towers are also prefabricated at the plant by the Manufacturing Division. These require annual purchases of about ten million board feet of top quality redwood lumber.

Custom Built Units

None of these units are manufactured as stock items; they are all custom built to fill specific orders. On a typical big project such as an oil refinery or a cycling plant, the overall installation may include approximately 25% of units manufactured by Fluor, but with 100% of designing and engineering for the entire plant and complete erection-installation by the Construction Division. This involves extensive and diversified procurement from other manufacturers and suppliers, with the necessity for closely controlling the flow of equipment and materials to the job that they may arrive as closely as possible to the date set on the schedule.

While late deliveries can, of course, occasion expensive delays and hamper progress, it must also be kept in mind that too early deliveries can also add to expense.

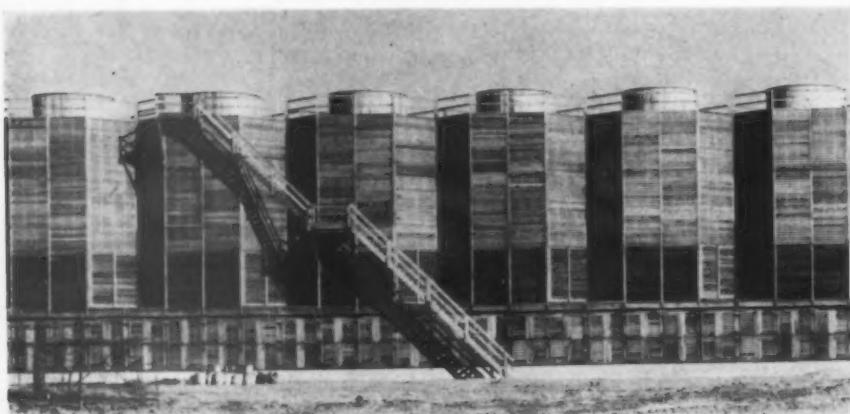
For example, it might become necessary to erect cribbing for temporary storage of a heavy unit of equipment, and to handle it twice, instead of permanent placement at the time of delivery.

Working With Other Divisions

From the purchasing standpoint, there is a dual relationship with the Manufacturing Division. In addition to serving this Division by procuring the materials required, Purchasing looks to the Division as a supplier of units for the overall project. Purchase orders are placed with the Manufacturing Division for the products supplied by them, the same as with any other vendor. At times they may even have to compete with others for the order.

When an order for a big project is received, the engineering work is done and is translated into detailed drawings and specifications. The Project Manager on the job has a construction schedule made up, which incorporates a chronological progress of all work to completion. The construction schedule governs purchasing and manufacturing schedules. It is, of course, flexible to the extent that certain changes may be required from time to time.

Typical Installations Engineered and Built by Fluor Corporation

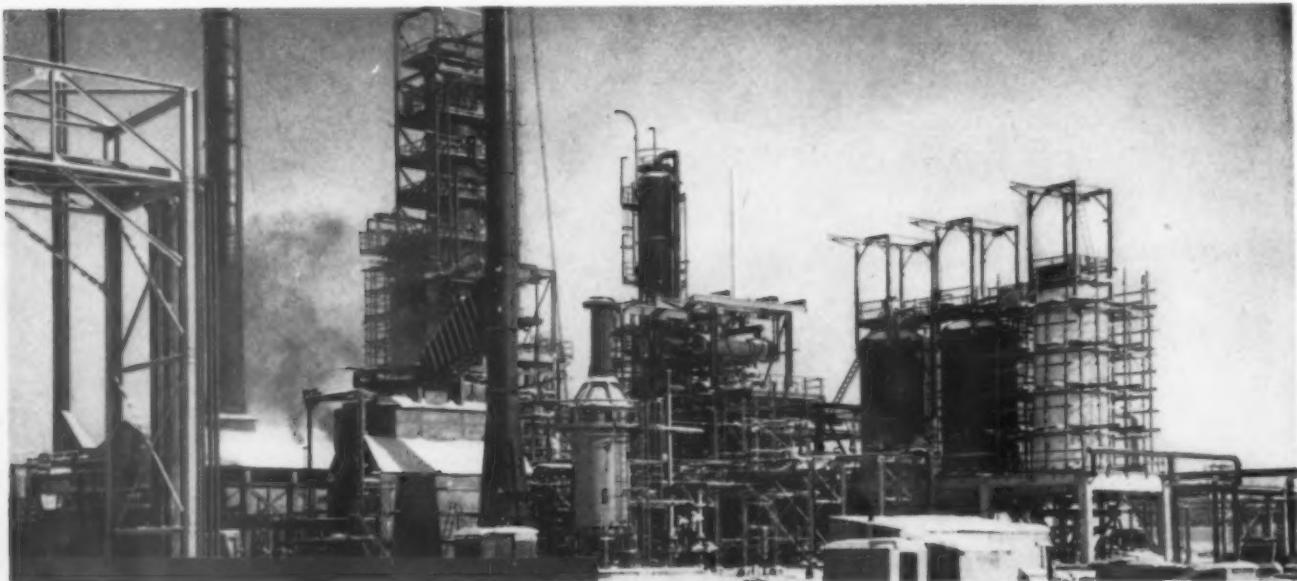


Redwood cooling towers built for El Paso Natural Gas Company at Denver City, Texas



One of several muffler installations along the Texas-California "Biggest Inch" Pipe Line

Crude unit of the Carter Oil Company refinery at Billings, Montana



to conform to conditions that cannot be unalterably pre-planned.

These specifications and schedules come to the Purchasing Department. Owen W. Gaudern, Manager of Purchases, is the executive in charge of purchasing activities both at the main office and in relation to other purchasing locations.

From analysis of the drawings and specifications, plus specific requisitions and advices from the Project Manager's engineering department and from the materials control staff in the Construction Division, requests for quotations are made up and sent to the appropriate manufacturers and vendors. Delivery time and place are specified in the project schedule. Purchasing calculates the necessary travel time from source to job-site, and the requests for quotations specify the time of shipment required to meet schedules. A shipping promise is an essential part of every vendor's quotation.

Knowledge of Suppliers

One important asset of this Purchasing Department is a comprehensive knowledge of suppliers for every type of requirement on the job, obtained from long experience and records of performance over many years. This 60-year-old company began doing its first work for the oil and gas industries about 30 years ago, and has been concentrating more and more in this specialized field.

Upon selection of vendors for the items not coming from the Manufacturing Division, carefully considering all purchase factors, the

SERIAL NO. 21		PAGE NO. 1 of 1	MATERIALS EXPEDITING REPORT THE FLUOR CORPORATION LTD.				DATE OF THIS REPORT. December 23		1952
CUSTOMER		Ci Corporation, Ltd.	ADDRESS		LOCATION		ACCT. NO. 21223		
PLANT OR UNIT		Gasoline Plant #62							
P. O. NUMBER AND DATE	VENDOR	BRIEF DESCRIPTION OF MATERIAL	MANUFACTURER	FACTORY IDENTIFICATION No.	FACTORY LOCATION	SHIPMENT REQUIRED	PRES. SCHEDULE	DATE LAST CONTACT	% SHIPPED AND DATE
40108 7-10-49	United Steel	Storage Tank, V-28	Same as vendor	7-16-49	Birmingham	9-15-49	10-9-49	8-2-49	
40109 7-25-49	Basic Steel	7 - Ladders and Platforms	" " "	25084	Houston	9-15-49	9-15-49	8-5-49	
40201 5-17-49	A.B. Brown	2 - Air Cleaners	" " "	56606	Louisville	9-1-49	8-20-49		(7)
40202 5-27-49	J.C. Smith	2 - Oil Filters	Harold & Co.		Mineral Wells	9-1-49			100% 9-6-49
40204 7-15-49	Richt Co.	Air Compressor	Same as vendor	8-20096-8	Holyoke	9-1-49	9-7-49	8-21-49	100% 8-22-49
40205 5-31-49	Johns - Park	2 - Air Compressors	" " "	KG-7997-U	Massillon	8-15-49			100% 8-23-49
40202 5-31-49	Black Rose	2 - Twin G Fin Sections	" " "	EO 3677-9 3480-2	Houston	8-15-49	8-25-49	8-20-49	
40203 6-6-49	Builders & Mfg. Co.	7 - Heat Exchangers	Johns Boiler Works	49-7192	Tulsa	9-1-49	9-15-49	8-4-49	
40201 5-26-49	Joseph Jones	12 - Cooling Sections	Same as vendor	16764K	Los Angeles	9-1-49	10-5-49	9-8-49	20% 9-9-49
40202 6-16-49	Cross Pump	2 - Turbine Pumps	" " "	85664-F	Battle Creek	8-15-49	10-2-49	9-8-49	Week (2)
40202 6-10-49	E & S Steam Pump Co.	9 - Reciprocating Pumps	" " "	85658-B	Schenectady	9-1-49	10-3-49	9-8-49	Week (3)
40204 6-7-49	Bisk Engineering	4 - Centrifugal Pumps	Best Fay & Sons	120705	Los Angeles	9-1-49	9-2-49		100% 9-2-49
40205 6-7-49	Jackson Bros	4 Centrifugal Pumps w/Motors	Same as Vendor	05-2830	Phillipsburg	10-1-49	9-30-49	8-23-49	25% 8-26-49
40206 6-2-49	Perry - Kane	7 Centrifugal Pumps w/Motors	" " "	87800	Newark	8-14-49	9-5-49	9-8-49	100% 8-20-49
40201 6-8-49	United Electric	4 Motors	" " "	8-7-3111	Chattanooga	9-1-49		Sept. 1949	20% 7-2-49
40201 7-16-49	Dixie Supply	2 - 150 HP Locomotive Boilers	" " "	205	Tulsa	8-15-49 9-1-49	8-15 (1) 9-1-49	9-8-49	100% 9-8-49
40209 7-16-49	Jones Engineering	2 Oil Heaters	" " "		Bethelmont	9-1-49	9-1-49	9-8-49	100% 9-10-49

EXPLANATORY NOTES
 * FOR VENDOR'S ORIGINAL SHIPPING PROMISE SEE "PRESENT SCHEDULE" COLUMN ON THE EXPEDITING REPORT SUBSEQUENT TO ISSUANCE DATE OF PURCHASE ORDER. ISSUANCE DATE IS SHOWN UNDER EACH LISTED ORDER NUMBER.
 BRACKETS WITH FIGURES ENCLOSED THUS: "(1)" INDICATE NUMBER OF TIMES VENDOR HAS REVISED ORIGINAL SHIPPING PROMISE. THESE WILL BE SHOWN IN "PRESENT SCHEDULE" COLUMN.
 REPORT NO. 1 ON ANY PROJECT WILL LIST ALL ORDERS PLACED TO TIME OF ISSUE. SUBSEQUENT REPORTS WILL INCLUDE ALL ORDERS PLACED SINCE THE LAST REPORT AND ONLY THE UNSHIPPED ORDERS SHOWN ON ALL PREVIOUS REPORTS. WHEN AN ORDER IS KNOWN TO BE SHIPPED, AND IS SO INDICATED IN ANY OF THESE REPORTS, IT WILL NOT BE RE-LISTED IN REPORTS THEREAFTER. LOCAL ORDERS FOR IMMEDIATE OUT OF STOCK DELIVERY ARE NOT INCLUDED IN THIS REPORT. SYMBOLS PRECEDING THE INFORMATION SHOWN IN THE RESPECTIVE COLUMNS ARE EXPLAINED ON THE LAST PAGE OF THIS REPORT.
 FORM 111-A 22 T-45 A-G PRINTED IN U.S.A.

Specimen of monthly Expediting Report showing status of purchased material orders on a project. Actual size of form is 14x8½ inches

purchase orders are issued and proper entries are made on the Job Schedule and Progress Report.

Meanwhile, specifications have gone to the Manufacturing Division covering units and materials they are to supply, together with a purchase order. Manufacturing Engineering prepares the manufacturing specifications. From these, the Chief Buyer in the Manufacturing Division prepares requisitions, to be processed and filled through the Purchasing Department, for the materials and other supply items not already in stock or on order.

Continuous Follow-Up

As soon as the purchase orders are issued, the Expediting Section of the Purchasing Department goes into action, to keep constant track of the status of all the many items required for completion of the project. Through correspondence, telegrams and telephone calls, the expeditors are in touch with vendors and keep up-to-date on the status of all items on order—whether unshipped, partially shipped, or received in its entirety. Monthly reports are prepared to give this information to the key personnel concerned. A specimen copy of this report is shown herewith. It will be noted that in the last column

the percent of the order shipped, and date of shipment, are listed.

During the days of shortages and the sellers' market, considerable and continual personal, physical expediting was required to keep shipments up to schedule, and the expeditors spent a lot of time right at the plants of the vendors. During the past year, conditions have changed and the need for this type of expediting has virtually been eliminated.

Complete Job Descriptions

The staff and procedures of Fluor Corporation have been well systematized. As a part of this systematizing, a recent development in the Purchasing Department has been the setting up of complete job descriptions covering each position in the Department. A representative job description is as follows:

Job Code: 32

Department: Purchasing

Section: Purchasing

Recommended Job Title:

Present Title: Project Buyer

Supervised by: Project Purchasing Agent.

Supervises the Following Positions:

Assistant Project Buyers (1 or more), Commodity Buyers (1 or more).

Normally Promoted to this Job from: Assistant Project Buyer.

Normally Promoted from this Job to: Project Purchasing Agent.

General Purpose:

Procures, or causes to be procured, all material required by one or more construction projects assigned to him.

Issues all purchase orders and other papers necessary to transact the procurement of such material.

Detailed Duties:

Prepares, or causes to be prepared, and issues "Requests for Quotation" to vendors as required.

Tabulates proposals for selection of vendor.

In the absence of formal inquiry, is held responsible without further review for procuring material at the most advantageous price and shipping promise, and makes substitutions when necessary, contacting Project Manager for approval.

Places, or causes to be placed, all orders with the vendors and prepares and issues confirming purchase orders. Prepares subcontracts for execution by contractor and Manager of Purchases.

With the assistance of the expediting section, endeavors to bring actual shipping dates in line with construction requirements.

Prices bills of material submitted to him for estimating purposes.

On completion of construction, disposes of surplus materials to Fluor's best advantage.

Interviews salesmen and keeps informed of market conditions.

Expeditedly handles correspondence and other papers and causes to be maintained complete files on papers pertaining to his particular projects.

Maintains project supervision over all Assistant Project Buyers, Commodity Buyers and Stenographers assigned to his project.

Occasional or Irregular Duties: Related duties, as assigned.



A sales executive discusses the seller's responsibility and interest in giving top-grade service on customers' orders, with a table of practical suggestions on how this can be accomplished

What Happens to

LET'S not talk about *handling* an order. That suggests manhandling, perhaps even mishandling. Let's talk about *servicing* an order, which more accurately describes what we try to do, from the minute we receive it or are advised of its coming, to the time the shipment reaches its destination.

Selling involves more than merely disposing of a product at a given price. In the industrial field, it is not just a matter of having a certain number of salesmen in the field, who send in orders for cases of shoe polish or other staple items. In such cases, it may be practical to *handle* orders through clerical routine to the shipping department, and that completes the job.

Industrial manufacturers and their representatives are faced with a much larger task, selling *service*. This starts long before that valued piece of paper called an order is received. Some of us are involved in *specification selling*, which is entirely different from selling an item out of stock. It frequently starts anywhere from four months to two years before an order is born.

Service is sold when a representative offers a high quality product for a contemplated or immediate job. He sells service by assisting contractors, engineers, architects, and others with layout and selection problems. Home office personnel sells service by going over plans and problems sent in by customers or representatives. Service is something that is given without charge, yet we all know that some one must pay for the time spent in that man-

ner. The result is obvious—the cost of service goes into the price. It is usually well worth the difference.

Service must continue after the order comes in. Valuable time already invested by sales and engineering departments must be protected; thus, other members of the

organization must back up the initial efforts for continuing success.

Companies that render real service cannot afford to put orders through a routine system and stop there. That may be all right for shoe polish or tooth brushes, where orders may always be shipped in the

FOUR ESSENTIAL STEPS IN SERVICING AN ORDER

1. Evaluation.

Decide whether special attention is required; if so, what action shall be taken. Evaluate the reasons for urgency. Check customer's record of previous business. Check the job application, which may have immeasurable promotional value. If the order calls for replacement of a competitive product, your best and fastest service should be given. Size of the order does not tell everything. A rush job, well handled, can well lead to larger orders in the future.

2. Follow-Up.

Let the customer and representative know that the order has been received and entered, by sending out acknowledgments promptly. Give a shipping date. If delivery can not be made by date requested, suggest part shipments or write a letter of explanation. If shipping dates previously promised cannot be kept, advise parties concerned before the promised date arrives. Don't put the burden of follow-up on the customer and cause him unnecessary expense.

3. Accuracy.

Give the customer the goods he orders, and in the manner specified. Incorrect items, quantities, and short-shipments are a nuisance, definitely detrimental to good business relations.

4. Proper Packing.

Pack goods to insure delivery in good condition. Damaged goods do not satisfy the order; they delay the job and impair the customer's service to his customer. Recovery of damages from the carrier is a nuisance and does not rectify the harm that has been caused.



Your Order?

By Walter A. Kurnik
Anemostat Corporation of America

same sequence as received. This can't be done by a company that renders service. First, it is necessary to evaluate the importance of all orders and keep limited inventories in mind, as soon as the order is received.

It is unfortunate that too many

customers wait until the last minute to submit their orders, and then insist on the earliest possible shipping date. If a million dollars could be spent in trying to change this practice, it would still be like trying to push back the tide. Manufacturers must adapt themselves to meet con-

ditions as they exist.

Too many orders are received marked "Rush", "Immediate", "Urgent", or with some other variation of the same idea. Like the fellow who heard the cry "Wolf" once too often, it is natural for the manufacturer to discount such requests. Nevertheless, he must try to keep the honest "wolf criers" satisfied. Through systematic evaluation, proper grouping of orders according to urgency is possible. In the accompanying table, some typical situations are presented. Common sense and good judgment will go a long way toward keeping everybody happy.

Service doesn't stop with the evaluation and scheduling of orders. It must be carried on through systematic follow-up, careful attention to detail, and proper delivery in good condition. Some practical suggestions are given in the tables. From these, the purchasing agent may see what he has a right to expect, and has a basis for evaluating a manufacturer's service.

Not every order will necessarily fall exactly into any one of these groups. Evaluation must be flexible. So must the succeeding stages of follow-up service. It is of course essential to have a system in mind for servicing all orders, but nothing should be strictly routine, for routine is not likely to be recognized by the customer as good service.

A customer, well serviced, becomes a better customer. A good customer, poorly serviced, makes good eligible prey for competition.

FIVE TYPICAL SITUATIONS IN EVALUATING ORDERS

1. Orders

that come in without any accompanying letter or special requests. These are put through the regular routine, and in most cases everybody concerned will be satisfied and happy.

2. Orders

that come in with an explanation why they should be given proper attention. These have to be considered and evaluated carefully. In many cases, regular Group 1 treatment will be satisfactory. In other instances, we are aware that extra attention is necessary.

3. Orders

that come in by airmail, special delivery. Usually they are accompanied by letters appealing for quick handling and shipment. It is wise to heed these requests. It is evident that the representative or customer has already given extra attention and service to the particular job, and it is our obligation to apply equally preferred service.

4. Orders

that come in by telegram. Such orders, from representative or customer, really mean business! A telegraphed order should be given first preference over other orders.

5. Orders

that come in by long distance telephone. These are usually even more urgent than the telegraphed orders, as indicated by the added expense incurred by this method of ordering and the desire for personal contact. Such orders also get top priority.

WOOL FELT

**... versatile material
... precision product
... hidden ingredient**



A thick cushion of felt absorbs excess vibration in this hand operated electric sander.

WOOL FELT manufacturers enjoy the distinction of furnishing varying quantities of material to a larger number of consumers than any other branch of the textile industry. It is sold to consumers across the dry good counter, but this accounts for a relatively small proportion of the output. In many of its applications, the ultimate consumer is quite apt to be unaware of its presence or of the part it has played in the production process. The felt industry, therefore, serves principally as the supplier of a hidden ingredient to other industries.

About one thousand different kinds of felt are purchased by more than a hundred different industries according to manufacturers' records. In thousands of products, felt is cut up into little bits of pieces to serve many widely different purposes, all of which are highly important though seemingly incidental. It is also used extensively in manufacturing operations for purposes which no other material serves as well.

To be more statistical would be difficult, because a great deal of felt is bought in varying quantities for unspecified purposes, and the manufacturers have no way of knowing how it is to be used. One of the mysteries of this industry is the unanswered speculation as to where much of the felt goes, the use of which has never been accounted for at the mills.

On the other hand, some of the more important applications have been developed through the joint efforts of producers and consumer industries. The liaison between the laboratories of the felt mills and the consuming plants has markedly improved since World War II, which brought all industries into closer touch with each other and with the sciences.

Twelve basic functions account for the widespread applications and usage of felt. In many instances these characteristics or functions are used in combination, serving a dual purpose. They are:

1. Friction.
 - a. Dynamic (as in grinding or polishing).
 - b. Static (as in clutches and brakes).
2. Resilience (as in shock absorption, vibration isolation, sound deadening, cushioning).
3. Spacing (as in washers, gaskets, and packing).
4. Padding.
5. Surfacing.
6. Packaging.
7. Sealing.
8. Filtration.
9. Thermal insulation.
10. Wicking.
11. Apparel.
12. Decoration.

Wool felt is an ancient material, known since the days of Marco Polo. It is a compound of wool and work, usually untrammeled by elaborate processing techniques and innocent of resins or other adhesives. It is still, as it was in primitive times, pure wool or wool mixed with other fibers, steamed and rolled into a loosely pressed mat, then rolled and kneaded, re-rolled and beaten, until it emerges as a tough and remarkably durable fabric.

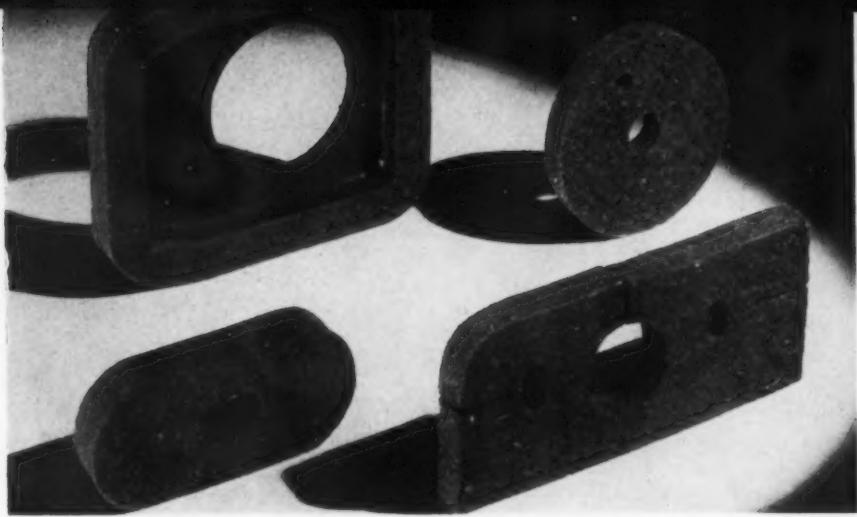
Felt owes its integrity to the fact that the wool fibers are interwoven in every direction according to a self-selected arrangement that contrasts sharply with the guided pattern imposed on every fiber in yarns, threads, woven and knitted goods. The property of felting, which is a strongly marked characteristic of sheep's wool but present in diminishing degree in the wool and hair of other animals, is due to the structure of the fiber.



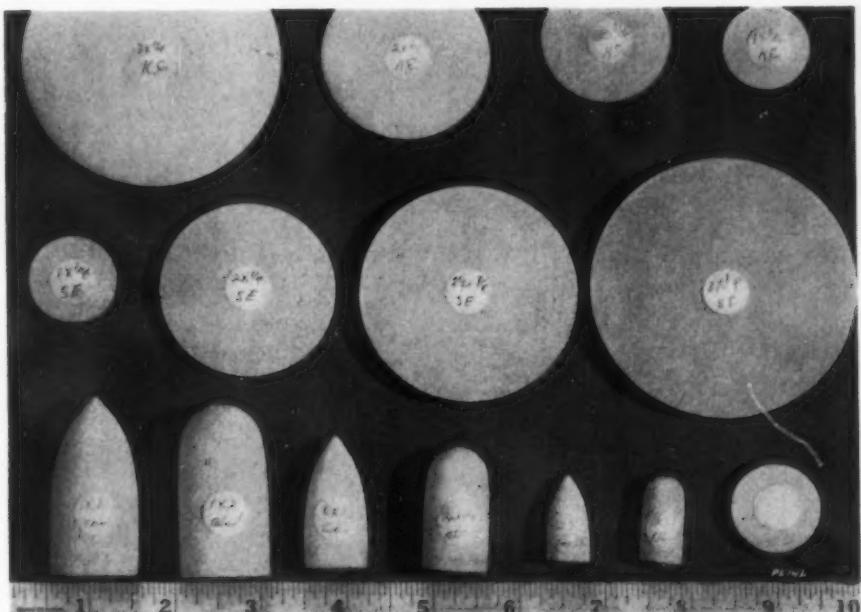
Compact engine oil filtration unit uses natural white wool felt to provide a large area for trapping impurities with a minimum of resistance.

When viewed under the microscope, the tapering wool fiber is seen to be covered with minute barbed scales, pointing toward the tip and curving outward. Therefore the kinky, scaly fibers, when matted and rubbed together while rendered pliable by heat, moisture, and lubrication, intertwine and migrate, each fiber following its own path of least resistance, root end foremost, until a loose fabric is formed. Considering the nature of the process, the dispersal of the filaments is astonishingly uniform. This loose mat is then shrunken by "fulling", as the classic milling operation is termed, until the desired density and dimensions have been attained.

Modern felt differs from that of the ancients in point of refinement. It is made by mechanical pro-



Grommets of treated felt, used on the jeep. This group includes transmission cover, accelerator pedal, emergency brake, and steering wheel parts.



(Photographs by courtesy of The Felt Association)

Small grinding wheels and bobs turned from sheet felt have many useful applications in light manufacturing where finishing requirements are exact; they are available in any shape or size.

cesses on specialized equipment under scientific control. Standardized testing methods facilitate the design and fabrication of the wide range of types to fit recognized end uses or to meet standard specifications in terms of physical and chemical properties. Nevertheless it remains a craft product, in that the art of the fuller has never been duplicated by machine. Despite extensive mechanization, a certain amount of skillful manipulation is inherent in the process.

The fulling operation may be continued until an exceedingly hard material emerges. "Rock hard" is the trade term by which the hardest felt, used for polishing wheels, is described. But felt in any degree of hardness or density is still the same material. A corn plaster, a black-

board eraser, or a wheel for polishing metal, glass, or gems might conceivably emerge from the same bale of wool after varying degrees of similar treatment.

The many varieties of felt are based largely on raw stock selection and blending. Differences in the character of the mixtures with other fibers — animal, vegetable, and man-made — produce widely contrasting materials. Differences in degree, rather than kind of processing, and the resulting differences in weight, thickness, and finish, create other distinctions. Treatments with dyes or chemicals sometimes are used to implant supplementary properties. Altogether, the possible variations in the product are endless.

Felt is chemically clean. Wool is non-reactive to many chemical

agents, and felt may be rendered both chemically neutral and sterilized. Thus it is found in use by the food industries in filtering nutrient broths and fruit syrups; also in the preparation of photographic emulsions, electro-plating solutions, paints, lacquers, and oils.

No clogs on the electronic brain. The intricate mechanism of the selective sequence electronic calculator, IBM's "mechanical brain with a memory", handles figures accurately at a rate of 30,000 digits a minute. These super-speed machines must be automatically oiled to keep them going, and the lubricant for each bearing is fed through a tiny plug of felt. This filters the oil to keep out gritty particles that might be pumped in from heaven knows where. Is it too much, then, to say that without felt the "brain" might soon tire?

Among the hidden applications of felt are many associated with the lubrication of moving parts of machinery. Surprisingly small quantities of this closely integrated fiber are sufficient to do the average job that nothing but felt will do. Midge-size electric motors, no bigger than your fist, are sealed and lubricated for life with felt. It is sponge-like, serving as a reservoir for oil, or wicking the lubricant by capillary action from a liquid reservoir below to the moving part above.

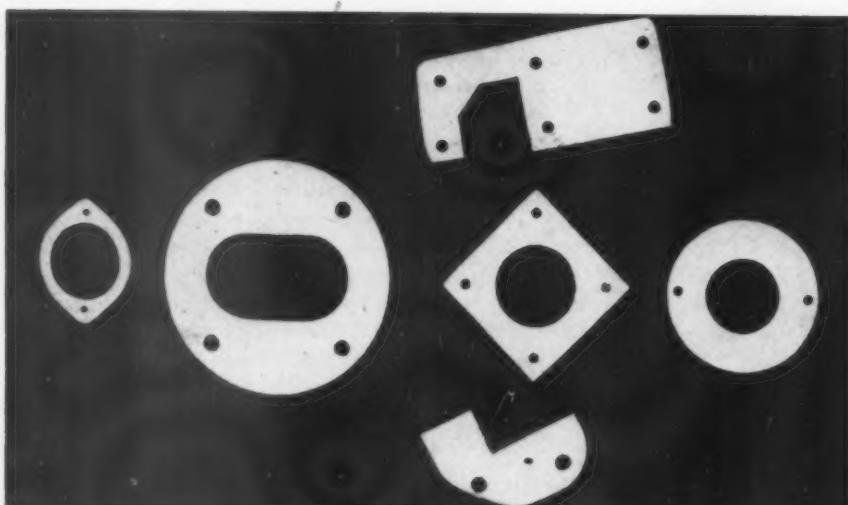
Pads and rolls of felt are widely used in the application of adhesives, as in a plastic package sealer; to distribute inks, as in printing telegraph machines, postage meters, cash registers, and many other devices. The graphic arts call for felt etchers' blankets, for blotters in silk screen

Scratch wheel faced with three inches of wool felt is used with water and abrasives to eliminate scratches from polished plate glass and mirrors.





The hidden ingredient in this seal motor pillow block consists of felt seals shown in the cutaway view. Rotating with the inner seal rings, the centrifugal action prevents entry of dirt and eliminates any tendency to glaze and render the felt inoperative.



Wool felt washers and gaskets can be tailored to meet tolerances of a few thousandths of an inch, in all shapes and sizes. Properties of resiliency, tensile strength, etc., are made to order in processing.

printing, for transferring masses of color in the block printing of wall-papers.

Another characteristic of felt is its horny toughness. This results in its use as a polishing agent, principally as an applicator of abrasives. It is extensively used in finishing ophthalmic lenses and in polishing plate glass and tableware. Its use in the hand rubbing of finely finished furniture is traditional. Felt wheels, coated with glue and rolled in abrasive powders, are used in many grinding and polishing operations on metals, stone, and gems.

Spring-like resilience of wool is one of its most valuable characteristics, accounting for many felt uses. The felt industry is one of its own good customers in that the massively timbered hammer mills used in fulling are themselves cushioned on felt pads which act as shock absorbers. The same is true of punch presses and drop hammers. Looms, printing

presses, and other machines having a pronounced vibration frequency also are mounted on felt pads to reduce air-borne noise and cut down the transmission of vibration to mill structures and consequent building up of resonance.

According to the testimony of mill superintendents, machinery which produces unbalanced forces of a destructive nature will wear longer and record less "outage" for repairs and replacements when mounted on felt. Sensitive measuring instruments and radio parts are protected from the influence of extraneous vibration by felt mountings.

The automotive industry has been a volume buyer of felt for many years, distinguished by the large number of small items specified rather than by the bulk which any one of them represents. Here is an abbreviated list:

Motor: fan bearing oiler, water pump packing, generator bearing seals, generator and starter lubri-

cating wicks, oil filter, battery terminal anti-corrosion washer, carburetor.

Transmission: oil seal washer, drive shaft dust seal, clutch housing pan dust seal, universal oil seal.

Chassis: brake bolt oiler, steering tie-rod dust seal and flange joint seal, steering arm bearing oiler, front wheel bearing seal, wheel brake shoe oiler, steering column grommet, body-to-chassis anti-squeak strips, rear axle drive shaft seal, axle drive pinion bearing seal, spring cover lining, fuel tank strap gasket.

Body: toe board and floor board liner, windshield wiper pivot, window lift lubricators, door panel insulator, top insulation, window run channel, upholstery riser strips and plumper lining, rear panel weather-strip.

In other words, felt is used in twenty to thirty places in automobiles for such purposes as lubrication, reducing friction, damping vibration, excluding dust, filtering, thermal insulation, and for decorative effects. In such uses it is often an alternative for rubber, cork, leather, cloth, paper, fiberboard, laces, braids, and tapes, and it is often used in combination with such materials to impart to the finished product qualities which they do not possess.

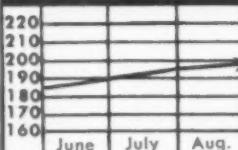
In television, too. Industry's latest and lusty infant has an important use for wool felt. A leader in the field of radio and television studio construction employs felt strips, $\frac{1}{2}$ " by 6", in small isolators which are a part of the successful installation of its sound isolation system.

Watch your terminology. Wool is wool, and there is a law forbidding the labelling of any product as being made of wool unless, in fact, it is. Felt is felt, but there is no law forbidding misuse of that noun, consequently, the purchaser or the public at large may sometimes be misled by confusing terminology.

Felt-like products other than wool felt itself must be hyphenated to establish their own identities. Thus the fiber origin is indicated in fur felt, hair felt, and asbestos felt, which are of different construction from true wool felt. Punched, blown or flocked, woven, stitched, or quilted felts likewise are fabricated by other methods than felting. Still other felt-like materials are designated according to principal use, as roofing felt, billiard felt, papermakers' felt, as well as felt-backed linoleum and others which are bonded with an adhesive.

Where We Stand

PRODUCTION

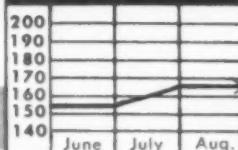


Today's Business Trends As Reported In Current Statistics

	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
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Industrial Production Index	1935-39=100	199	196	169	+ 1.5	+17.7
Steel Production (Weekly)	000 net tons	1,931	1,895	1,539	+ 1.9	+25.5
Electric Power Production (Weekly)	mil KWH	6,247	5,380	5,466	+16.1	+14.3
Bituminous Coal Production (Weekly)	000 net tons	10,560	1,500	7,522	+604.0	+40.4
Auto, Truck & Bus Output (Weekly)	units	171,502	132,809	142,346	+29.1	+20.5
Petroleum Output (Weekly)	000 bbls.	5,568	5,398	4,670	+ 3.0	+19.2

PRICES

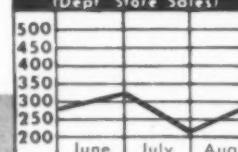


	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
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All Commodities (BLS)	1926=100	165.5	161.9	153.3	+ 2.2	+ 8.0
Farm Products	1926=100	177.5	176.3	164.0	+ 0.7	+ 8.2
Metals & Metal Products	1926=100	173.9	173.1	168.2	+ 0.5	+ 3.4
Building Materials	1926=100	212.7	203.8	188.9	+ 4.4	+12.6
Steel Billets (Pittsburgh)	net ton	\$53.00	\$53.00	\$52.00	0	+ 1.9
Steel Scrap, heavy melting, Pitts.	ton	44.75	41.75	22.75	+ 7.1	+96.7
Copper, electrolytic	lb.	.22 1/2	.22 1/2	.17 1/2	0	+27.8
Cotton, mid. 15/16"	lb.	.3845	.38	.3205	+ 1.1	+19.9
Rubber (Rib-smoked sheets)	lb.	.42	.36 1/4	.16 1/2	+15.8	+154.5
Wheat, No. 2	bu.	2.50	2.56 1/4	2.33	- 2.0	+ 1.3

TRADE

(Dept. Store Sales)



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
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Dept. Store Sales Index (Fed. Res.)	1935-39=100	296	216	228	+37.0	+29.8
Commercial Failures (Dun & Bradstreet)	no.	168	138	171	+21.7	- 1.8
Freight Carloadings	cars	837,218	553,876	716,863	+51.1	+16.8

FINANCE

Stock Prices (Standard & Poor's)	1926=100	146.7	132.5	122.6	+10.7	+19.7
Bank Clearings (New York)	mil \$	7,131	7,236	6,226	- 1.4	+14.5
Federal Reserve Credit	mil \$	18,904	18,757	18,924	+ 0.8	- 0.1
Currency in Circulation	mil \$	27,015	27,169	27,409	- 0.6	- 0.7

MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

**Value of Manufacturers' Sales
Seasonally Adjusted
(Millions of Dollars)**

All Manufacturing	
Durable goods	
Iron and Steel	
Nonferrous metals	
Electrical machinery	
General machinery (exc. elec.)	
Motor vehicles & equipment	
Transportation equipment (exc. motor vehicles)	
Lumber and timber products	
Furniture & finished lumber products	
Stone, clay & glass products	
Nondurable goods	
Food and kindred products	
Beverages	
Tobacco products	
Textile-mill products	
Apparel	
Leather and products	
Paper and allied products	
Printing and publishing	
Chemicals and allied products	
Petroleum and coal products	
Rubber products	

	1949		1950			
	May	June	Mar.	April	May	June
17,741	17,990	19,144	18,459	18,695	21,239	
7,488	7,745	6,127	7,956	r9,089	9,550	
1,768	1,811	1,989	2,015	r2,261	2,324	
452	512	572	542	r648	746	
741	730	885	833	r918	994	
1,229	1,195	1,272	1,219	r1,350	1,352	
1,389	1,553	1,456	1,486	r1,756	1,906	
484	454	395	384	r418	386	
381	417	460	450	r529	605	
328	339	366	352	r394	410	
367	369	389	360	r459	455	
10,253	10,244	11,017	10,502	r11,606	11,689	
3,027	3,006	3,010	3,023	r3,460	3,449	
671	701	604	577	r658	739	
284	279	286	254	285	291	
936	984	1,091	1,027	r1,166	1,182	
807	685	724	620	r616	547	
279	303	290	264	r293	319	
451	461	636	574	r640	666	
573	592	722	648	r674	679	
1,144	1,143	1,311	1,221	r1,374	1,409	
1,523	1,525	1,632	1,662	r1,716	1,740	
248	266	306	303	337	n.a.	

**Book Value of Manufacturers' Inventories
Seasonally Adjusted
(Millions of Dollars)**

All Manufacturing	
Durable goods	
Iron and steel	
Nonferrous metals	
Electrical machinery	
General machinery (exc. elec.)	
Motor vehicles & equipment	
Transportation equip. (except motor vehicles)	
Lumber and timber products	
Furniture & finished lumber products	
Stone, clay & glass products	
Nondurable goods	
Food and kindred products	
Beverages	
Tobacco products	
Textile-mill products	
Apparel	
Leather and products	
Paper and allied products	
Printing and publishing	
Chemicals and allied products	
Petroleum and coal products	
Rubber products	

33,565	33,250	31,103	31,219	r31,509	32,059
15,994	15,727	13,878	14,011	r14,140	14,397
3,629	3,564	3,109	3,171	r3,228	3,300
1,120	1,136	977	996	r991	1,015
1,941	1,888	1,593	1,606	r1,660	1,700
3,533	3,484	3,117	3,116	r3,119	3,163
2,008	1,977	1,806	1,840	r1,829	1,832
909	915	677	648	r626	650
725	652	615	619	r641	643
787	786	794	807	829	853
557	563	495	506	r503	518
17,572	17,524	17,225	17,208	r17,369	17,661
2,993	3,026	3,220	3,194	r3,217	3,183
1,108	1,095	1,159	1,162	r1,143	1,102
1,614	1,633	1,673	1,687	r1,698	1,684
2,404	2,361	2,338	2,339	r2,466	2,591
1,404	1,412	1,524	1,496	r1,470	1,594
617	624	616	644	r665	691
894	872	775	778	r759	751
611	609	606	617	r615	642
2,316	2,278	2,112	2,128	r2,149	2,169
2,539	2,544	2,246	2,204	r2,213	2,240
650	644	595	598	609	n.a.

Manufacturers' New Orders (Unadjusted)

All Manufacturing	
Durable Goods	
Non-Durable Goods	

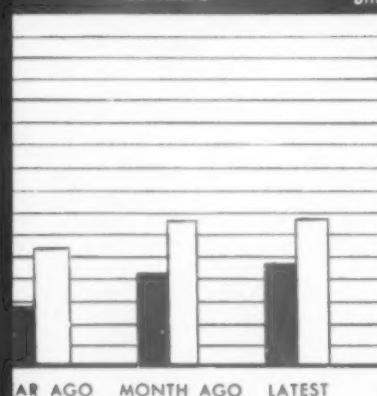
15,734	16,300	20,228	18,594	r20,345	22,626
5,993	6,544	9,075	8,531	r8,909	10,665
9,742	9,756	11,153	10,063	r11,436	11,962

n.a. — not available

SALES, INVENTORIES AND INDUSTRIAL PRODUCTION

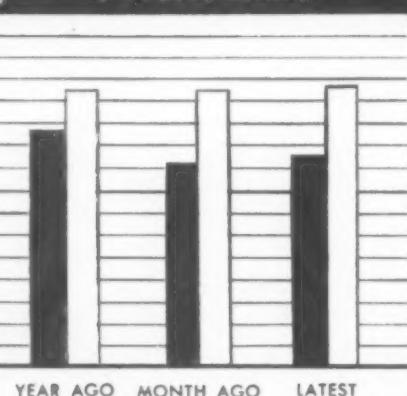
SALES

Billions of \$



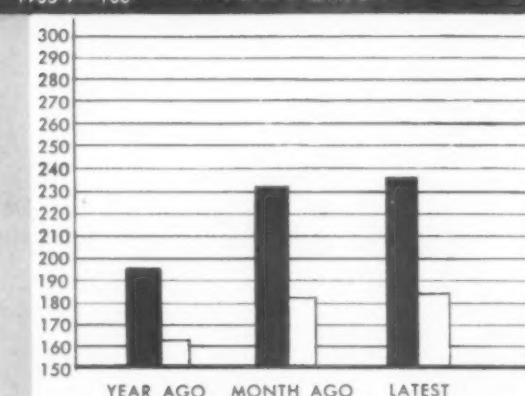
INVENTORIES

1935-9=100



PRODUCTION

1935-9=100



DURABLE GOODS

NON-DURABLE GOODS

Straws in the Trade Wind

● The National Association of Manufacturers has charged that some national administration members are overlooking facts about the productive capacity of the United States in their efforts to "seize control of the economic life of the nation". Earl Bunting, NAM managing director, declared recently: "At no time in its history has the productive might of American industry been so well prepared for whatever job is ahead. American productive might has been termed the arsenal of democracy, and it can be best maintained as such by a minimum of economic controls and governmental interference. If the time should come when allocations and priorities are required in the public interest, then such controls can best be exercised by industry committees functioning under government approval and protection."

- For every ton of steel made in Russia and the countries she dominates, nearly three tons were poured in the United States in the first half of 1950, according to an estimate by the American Iron and Steel Institute. Nearly five tons were poured in all non-Communist countries for each Russian ton in that period, it is estimated. The estimates are based on United Nations data.



● General Electric Company is in a position to produce substantially double what it produced during World War II, in the event of all-out mobilization, Charles E. Wilson, president, has declared. He said that approximately 20% of G.E.'s current business is defense work. Details cannot be revealed for security reasons.

● Leon Henderson, wartime head of the Office of Price Administration, told the American Retail Jewelers Association recently that production quotas for automobiles, refrigerators and household appliances may be set arbitrarily by the end of this year. He said that he did not anticipate any all-out freeze of the economy unless military demands and the attendant industrial expansion became very much greater than they are now.

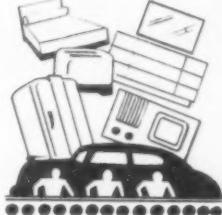
● A plan for relocation of vital industries in the event of all-out war has been strongly urged by Richard L. Rosenthal, president of Citizens Utilities Company. Criticizing the Government for not having formulated such a plan, he said that the problem involves not only decentralizing the industries, but making sure that such services as electric power, gas, telephone, and water are rearranged to meet the needs of the plants.

● The electric industry is in even better shape to meet the present defense emergency than it was when the nation began to get ready for World War II, L. V. Sutton, president of the Edison Electric Institute, has reported to W. Stuart Symington, chairman of the National Security Resources Board. There will be plenty of power to meet the needs of the country, he said, provided that "no government limitations are imposed which would prevent the completion of the construction program now under way."

● A demonstration plant to make gasoline from coal by a process used by the Nazis is being built by the Bureau of Mines. The plant will produce 80 to 100 barrels of 75-octane gasoline and other oils a day. In 1944 the Germans were able to produce a peak of 10,000 barrels a day by the method, which is a modification of the Fischer-Tropsch process.

● Consumers' prices rose 1.3% from June to July, according to the National Industrial Conference Board. Surveys of the price situation in ten major United States cities three weeks after the beginning of the Korean war, as compared with prices on June 15, show that rising food prices led the advance. Rising prices for meats, milk, sugar, bread, and coffee were mainly responsible for the increase.

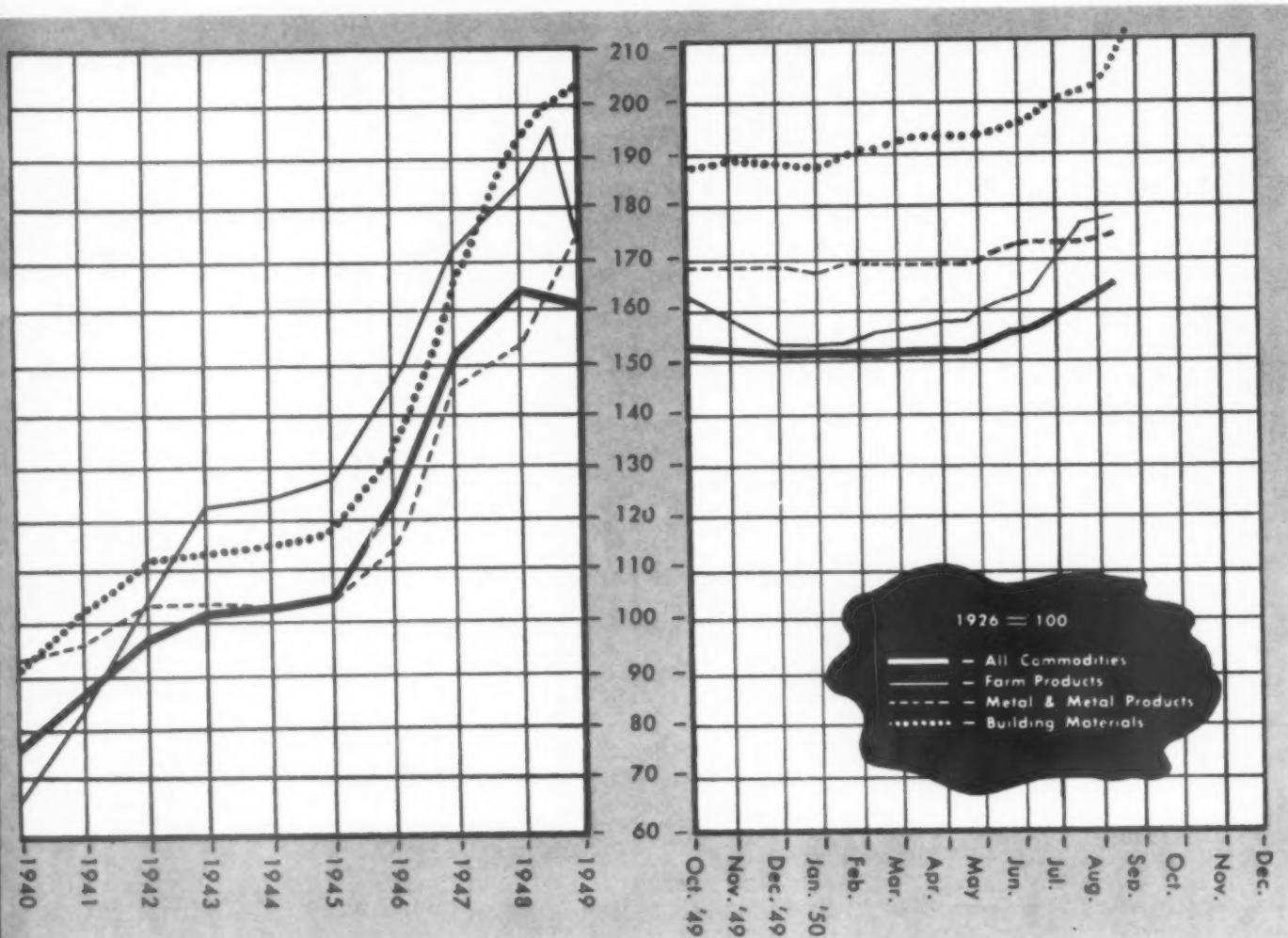
● Total sales of gas by utilities to ultimate customers in June were 2,926,174,000 therms, an increase of 18.3% over the same period last year, according to the American Gas Association. Total sales for the twelve months ended June 30, 1950, were 11.9% over those in the comparable period a year earlier.



● The automobile industry at mid-August was about two months ahead of its record-smashing production of 1949, according to figures of the "Automotive News". Four million cars and trucks had been produced in 1950 by that time, and if the present rate continues it is expected that No. 5,000,000 will be assembled in October.

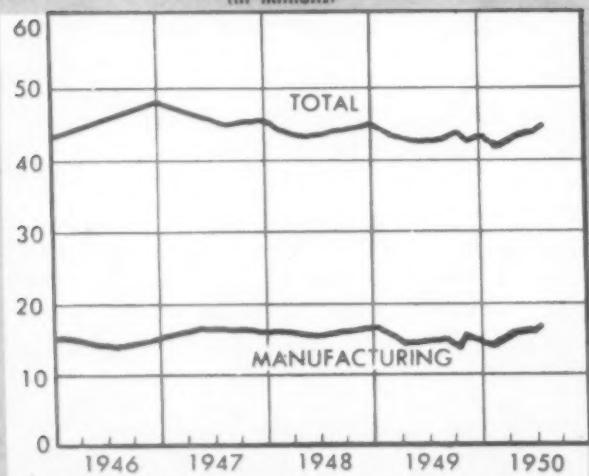
● United States exports gained \$51,400,000 in June, reaching a total of \$875,900,000. Imports were \$685,600,000, a rise of \$26,700,000. Exports were 10% over the monthly average set in the January-March period, and imports were 9% above the average for the first quarter of this year.

The Price Picture

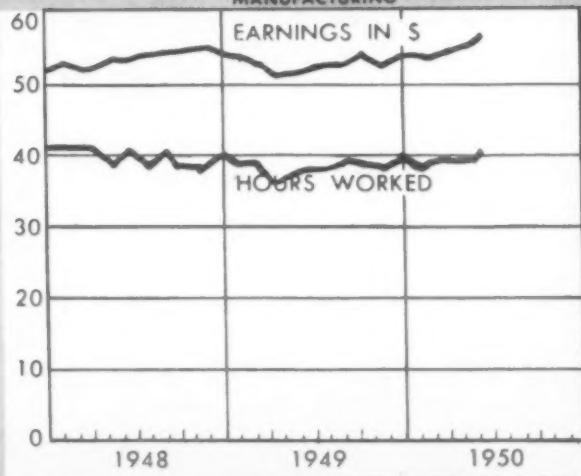


Employment & Earnings

NON-AGRICULTURAL EMPLOYMENT
(in millions)



AVERAGE WEEKLY EARNINGS AND HOURS
MANUFACTURING



SOURCE: U.S. DEPT. OF LABOR

The Pulse of Business

To take the title of this column literally for a moment, it might be said that the pulse during the past two months has been erratic enough almost to be a scientific phenomenon. First it beats like a trip-hammer, and a moment later slows down almost to imperceptibility. The disease, of course, is war jitters, complicated by acute headline-itis and severe politics-pox. Consoling, if not encouraging, is the fact that almost everyone else concerned—fellow patients, doctors, nurses, visitors and volunteer helpers—has about the same affliction.

One branch of the Government fairly beams with confidence, describing the ferocious fight against communism in Korea as a police action. Another branch, almost as highly placed, warns us that we are at the most momentous and dangerous period in our history. The Secretary of Defense, who a few months ago boasted we'd be ready at 5 if Joe Stalin started anything at 4 is now frantically calling for an additional fifty billion dollar outlay for military purposes. Up until a few weeks ago, every pronouncement from the authorities that no further steps toward manpower mobilization were expected "at this time" was followed by the calling up of additional draftees, reservists, or national guards. Politicians, about to come from the wings into the spotlight of the fall elections, are outdoing each other with highly oratorical charges and counter-charges. If the soldier in Korea could get a chance to read the daily newspapers for a couple of days, he might believe on Wednesday that this political party had put him in imminent deadly peril, while on Thursday he might be convinced that it was that political party. Since he doesn't get a chance to read the papers, he probably knows who it really was—the Russians.

Legislators who are hardly finished denouncing this group or that man for having brought our country to the very edge of doom, turn without blinking and warn us to be "calm" and not do anything that might alter

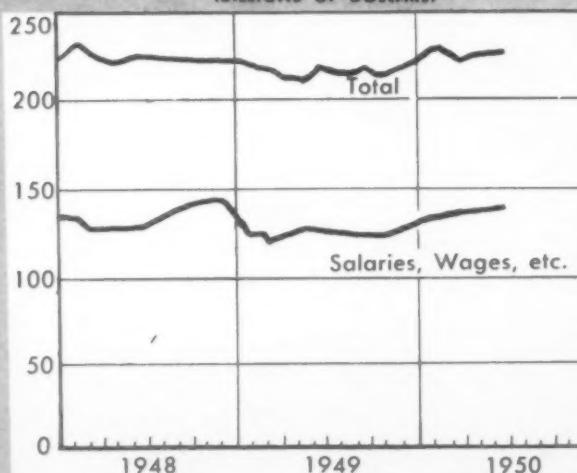
"our traditional way of life". Others who demand greater economy in Government, but abhor the very thought of controls, are confronted with testimony by armed forces officers that prices on the goods they buy are shooting up and playing hob with military budgets. Their colleagues who are hot for controls, more as a means of extending their power than anything else, howl with pain at the slightest suggestion that some of their favorite pork-barrel projects be cut down or eliminated "for the duration." And while G.I.'s in Korea beg for more men and supplies, Congress in a sensational burst of energy jams through a most important bill—the restoration of twice-a-day mail service.

Lest the whole business appear too gloomy, however, there have been numerous signs that, despite the general confusion, the business community, like the rest of the country, is prepared to meet whatever new crisis develops, and meet it with forthrightness and energy. All they want is to know the truth and to be told what is required of them. Indicative of the kind of shape we're in, productively speaking, is the latest Purchasing Opinion Poll, reported on page 77 of this issue. It shows that if necessary, American industry is ready to swing into war production more easily and quickly than last time. There are other good signs of willingness and preparedness, as indicated in the reports mentioned in the "Straws In The Trade Wind" and "Materials and Markets" departments of this section.

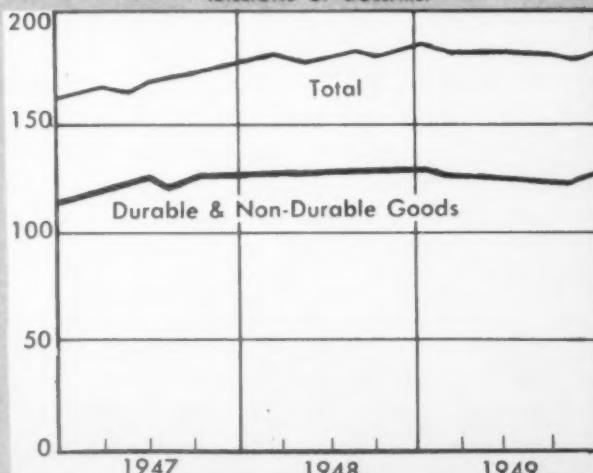
As for purchasing agents, a quotation from the official magazine of the New England Purchasing Agents Association, perhaps sums up their sentiments best. The editorial said: "While our young men are fighting and dying in far-off Korea as a sacrifice to the ideal of a better world, the battle of the profiteers and hoarders is gaining momentum here and purchasing agents are again faced with the struggle to procure materials and supplies at a price fair to both buyer and seller. Fortunate indeed is that buyer who has had the wisdom and courage to select and do business with the type of supplier who can be depended upon in foul as well as fair weather."

Personal Income & Expenditures

PERSONAL INCOME
(BILLIONS OF DOLLARS)

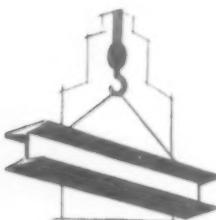


PERSONAL CONSUMPTION EXPENDITURES
(BILLIONS OF DOLLARS)



Materials & Markets

STEEL



With an already booming demand aggravated by increasing military orders, the steel market appeared to be bordering on a condition just short of the uproar stage this month. Despite the fact that all sorts of experts have pointed out again and again that the war requirements occasioned

by the Korean war will call for about 10% of the industry's output in the next year, orders to mills have been pouring in at a tremendous rate. Which is understandable, since demand was great even before the war started, and a possible 10% cut in the amount of steel he can get in the balance of this year must loom quite large to a buyer who has already been having difficulty in filling his needs. Many must be reasoning further to just how meaningless that figure could become if the present crisis deepens. And the prospects of its deepening may well outweigh the prospects of its clearing up.

To meet the immediate situation, mills are reported to be scanning their orders carefully, first to give prime consideration to those intended primarily for military purposes and second to try to keep steel from skidding into a rapidly developing gray market. As a result there have been numerous disappointments. It is generally recognized, however, that much of the frantic activity is due to duplicate orders being placed by buyers as a protective measure and to attempts to get orders on the books before allocations begin. The pressure appeared to be on items of all kinds, where heretofore it had been chiefly and most heavily on flat rolled products.

Up to the time this was written, no action had been taken in Washington that would permit the steel industry to set up a voluntary allocation plan. The plan is expected to be approved, but trade circles feel that it will not be in operation until the fourth quarter. Industry-run allocations are seen as the means of straightening out the chaos that threatens the market, of calming some of the more worried and actively-ordering consumers, and of keeping the entire supply-demand situation in the best and fairest possible balance.

Price increases in some items began to appear during the month. Lukens Steel Company announced new base prices of \$3.90 per 100 lbs. for carbon steel plates and \$4.80 per 100 lbs. for low alloy steel plates, both f.o.b. Coatesville, Pa., effective on all shipments on and after August 14. Allegheny Ludlum Steel Corp. boosted hot rolled strip \$5 per ton to \$3.50 per 100 lbs. The Babcock & Wilcox Tube Company raised the base price of its seamless stainless steel tubing by 1½c per net pound. Although there was no indication that a general wave of price rises was imminent, observers were watch-

ing the trends in two major factors, raw materials and labor. Scrap prices were practically running away, and the steelworkers' union was reported as formulating some strong demands on the industry.

NON-FERROUS METALS

The Senate failed to do anything about the bill restoring the suspension of the two-cent import duty on foreign copper, and the effect of that action on prices was expected momentarily as this was written. Copper fabricators had been absorbing the tax that had gone back into effect at the end of June, hoping that the Senate would follow the House's action in voting again for the suspension. Now it is expected that their prices will go up in proportion to the use of foreign copper in their products, bringing home to consumers, in the words of C. Donald Dallas, chairman of Revere Copper & Brass, Inc., "what the tariff is costing them in dollars and cents".

Demand is still very high for copper, while production and industry stocks of the metal declined for the eleventh consecutive month in July, to a 6-year low. As a result of the shortage, Chase Brass & Copper Company has cut its production of brass from a six-day week to a five-day week, and American Brass Company and Scovill Manufacturing Company were planning to take similar action. The six-day week had been effective in all three plants since January 1. Deliveries to domestic consumers were off by about 25% during July, and further inroads are expected because of increasing military demands.

Tin prices hit a record high of \$1.04 ½ during the month then dropped a few cents, and were back again to \$1.02 at the time this was written. Speculative activity overseas, combined with the British Government's withdrawal of tin offers to conserve the metal for strategic purposes have kept the market in a turmoil.



Heavy buying in lead, presumably because of the Korean war, had its effect and prices went up. Buying by foreign consumers, who were apparently willing to pay more than the then current American price, was said to have aided in pushing prices up. From all present appearances the pressure for lead supplies will continue for some time to come.

Zinc production continued at a high rate, but demand did also, and stocks on hand at the end of July were the lowest for the year, 19,687 tons. This contrasts with a figure of 82,037 tons at the end of January and 85,408 tons at the end of July, 1949.

Continuing high demand for aluminum products caused the aluminum industry to produce 360,707,827 pounds of the metal during the second quarter of 1950,

according to figures of The Aluminum Association. This is about 12% above the production for the first quarter of the year, and is the largest amount of metal turned out by the industry in any quarter since the second quarter of 1944. Reynolds Metals Company announced that it had pledged itself "to give priority to meeting requirements for aluminum products essential to military preparedness", a policy that will make it necessary to allocate metal to customers for civilian use. The announcement also stated that it may result in delay in filling some orders that have been accepted, since it may be necessary to divert materials in production to urgent national defense requirements.

FUELS



Assurances that the nation's fuel industries are in a good position to meet any national emergency were given by industry spokesmen during the month.

Frank M. Porter, president of the American Petroleum Institute, said that the nation's capacity to produce and refine petroleum, as well as its proved reserves of underground oil, have increased by approximately one-fourth since the climax of World War II created peak demand for petroleum products. Domestic crude oil production, meanwhile, continued to climb toward record high. Production at mid-month was averaging 5,674,750 barrels daily, with increases expected in the permissible output in various oil-producing states. The all-time monthly average record of 6,722,100 barrels daily was set in December, 1948.

Jesse V. Sullivan, secretary of the West Virginia Coal Association declared that plenty of soft coal and the miners to mine it are available to meet possible war requirements. He pointed out that the industry now has the facilities to permit an annual production of 700,000,-000 tons. The greatest demand ever made before on the industry came immediately after the last war and amounted to 620,000,000 tons in one year. Mr. Sullivan predicted that no rationing of soft coal to consumers will be necessary, should the present conflict spread. The only reservations he had concerned a possible shortage of hopper and gondola cars to move the coal to market.

FOREST PRODUCTS

Fear buying is behind the apparent present shortages of paper products, according to E. W. Tinker, executive secretary of the American Paper and Pulp Association. Mr. Tinker cited figures that indicated that under normal conditions the present rate of production is running well above consumption, and pointed out that fears generated by the crisis in Korea have resulted in ab-

normal ordering. As a result, he said, many mills have been obliged, in self-protection, to bring order into the situation by limiting the volume of business which they will accept. The Korean episode alone, his report stated, cannot possibly require such great increases in the consumption of paper as to justify a fear of shortages.

The bulletin of the National Paper Box Manufacturers' Association, meanwhile, pointed out that demands for all types of boxes materially increased right after the July holiday weeks and gains are being recorded daily. Even before the war "scare", prices were advanced for boxboard, it declared, and further increases have since materialized and more upturns are predicted.

Although lumber production continued at a great rate, demand was still very high and many items were in scarce supply. Prices were staying up, with little prospect of any decline, particularly since the outbreak of hostilities, which always impose a strain on lumber supplies. Complicating the acute supply situation, according to a statement by R. A. Colgan, Jr., executive vice-president of the National Lumber Manufacturers' Association is the "worst railroad car shortage the lumber industry has ever known". He stated that railroad cars from the midwest and east going to west coast ports with necessary war matériel are not being delayed even a few days for reloading. Empty cars are being returned to points where they can be loaded with needed supplies and sent back to the west coast. It is reported that the west coast lumber industry, which was already short of railroad cars, now has less than 50% of the needed railroad cars to ship Douglas fir lumber stocks on hand.

MISCELLANEOUS

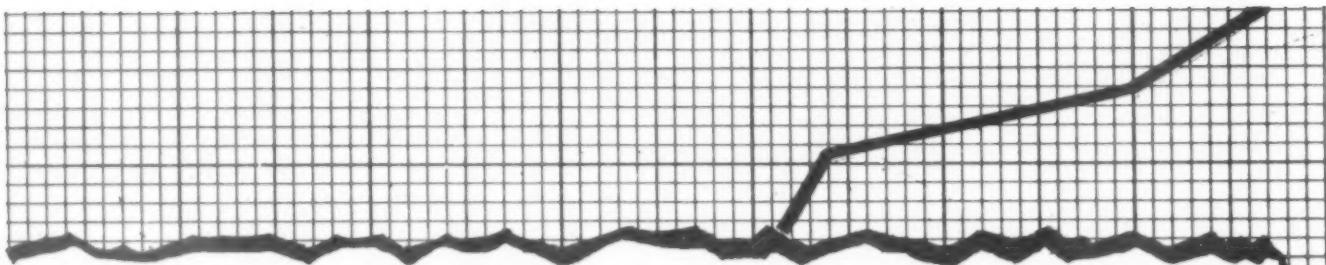
The Department of Commerce recently revealed that it is considering allocation of crude rubber to consumers. This is not unexpected, because of the seriousness of the situation in the Far East, the chief source of supply. It is expected that the production of synthetic rubber will be stepped up considerably in the coming months . . . Strikes at a number of plants producing soda ash have



created a tight supply condition in the commodity. Owens-Illinois Glass Company announced during the second week of August that it would halt glass container production at eight plants for three days because of a lack of soda ash. As this was written, Allied Chemical & Dye Corp., one

of the larger producers, stated that despite the strike soda-ash production operations have started at its Solvay Process division in Detroit . . . This year's cotton crop will be about 30% smaller than the current rate of consumption, according to the Department of Agriculture. Reserves from past crops are said to be sufficient to meet requirements until next year's crop is harvested.

The State of the National Economy in Five Key Years



	1929	1935	1939	1945	1950
(1) Cost of government . . .	\$3,182,807,000	\$6,591,519,000	\$9,026,982,000	\$100,397,471,000	\$40,167,000,000
(2) Military outgo	\$745,342,000	\$884,260,000	\$1,367,000,000	\$80,537,000,000	\$13,584,000,000
(3) National debt	\$16,500,000,000	\$34,400,000,000	\$42,600,000,000	\$252,700,000,000	\$257,472,765,000
(4) Industrial output	110	87	109	203	199
(5) Civilian employment	47,630,000	42,260,000	45,750,000	52,820,000	61,482,000
(5) Unemployment	1,550,000	10,610,000	9,480,000	1,090,000	3,384,000
(5) Armed Services	260,000	270,000	370,000	11,280,000	1,311,000
(6) Population	121,770,000	127,250,000	130,880,000	139,586,000	151,188,000
(7) Disposable income	\$82,500,000,000	\$58,000,000,000	\$70,200,000,000	\$151,100,000,000	\$196,200,000,000
(7) Taxes on individuals	\$2,600,000,000	\$1,900,000,000	\$2,400,000,000	\$20,900,000,000	\$18,900,000,000
(7) Consumer spending	\$78,800,000,000	\$56,200,000,000	\$67,500,000,000	\$123,100,000,000	\$183,400,000,000
(8) Retail sales	\$48,329,000,000	\$32,791,000,000	\$42,042,000,000	\$76,644,000,000	\$64,383,000,000
(7) Savings (individuals) . . .	\$3,700,000,000	\$1,800,000,000	\$2,700,000,000	\$28,000,000,000	\$12,700,000,000
(9) Consumer price index . . .	122.5	98.1	99.4	128.4	170.2
(10) Consumer food prices . . .	132.5	100.4	95.2	139.1	204.6
(11) Wholesale price index . . .	95.3	80.0	77.1	105.8	163.0
(12) Average weekly wage . . .	\$25.03	\$20.13	\$23.86	\$44.39	\$58.89

(1) 1929 is based on yearly average 1926 to 1930. Other years, fiscal year ended June 30. Figures are approximate. Source: United States Treasury.

(2) Figures (approximate) are for fiscal years ended June 30. Source: United States Treasury.

(3) Debt outstanding at end of each calendar year, except for 1950, which is debt as of close of business Aug. 4 this year. Sources: Department of Commerce and United States Treasury.

(4) 1935-'39 equals 100. Source: Federal Reserve Board. Figure for 1950 is for June only.

(5) Sources: Department of Labor, 1929, 1935 and 1939; Department of Commerce, 1945 and 1950. Figure for 1950 for month of June only.

(6) Source: Department of Commerce. Figure for 1950 is estimate as of April 1 this year.

(7) Source: Department of Commerce. Figure for 1950 is for first half of year at annual rate.

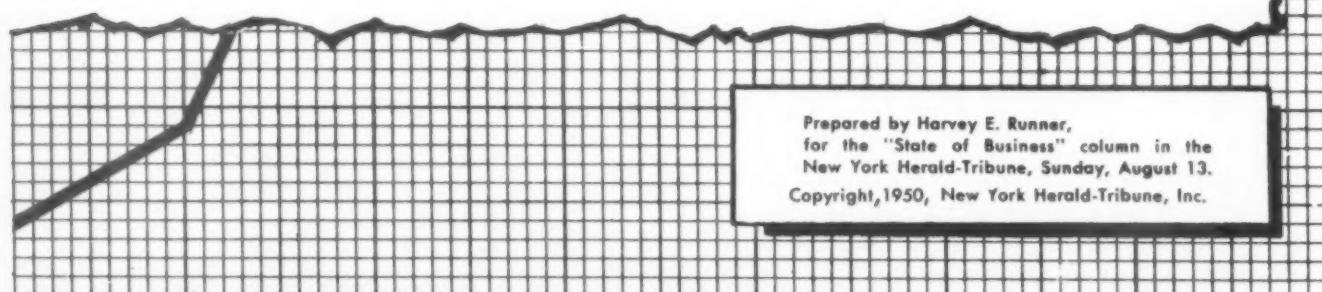
(8) Source: Department of Commerce. Figure for 1950 is total of all retail sales for first six months of this year.

(9) Source: Department of Labor. All items—for moderate income families in large cities. 1935-'39 equals 100. Figure for 1950 is for month ended June 15.

(10) Source: Department of Labor. Food prices for moderate income families in large cities. 1935-'39 equals 100. Figure for 1950 is for month ended June 15.

(11) Source: Department of Labor. All commodities. 1926 equals 100. Figure for 1950 July estimate.

(12) Source: Department of Labor. Average weekly earnings in manufacturing industries, both durable and non-durable goods. Figure for 1950 is estimate for June.



Education for Prospective Purchasing Agents

By Irving L. Metzner

As is the case with any profession that has worked long and hard to better its own position in the field of business, the profession of purchasing has come to realize that, in order to maintain the high position it has already achieved and to still further improve that position, it must be willing to devote a considerable amount of time and effort to education. This means not only the education of its already active members, but also the education of prospective members as well, for education is one of the chief means of injecting new blood into the field.

Through education it is possible not only to present new ideas of additional vocational possibilities to students, and thus attract them into the field, but also to apprise potential executives in other fields of the purposes, the principles, the ethics, and the benefits to be derived from a well organized, well trained purchasing department.

The subject of education, however, is a very controversial one. A considerable amount of argument is always occurring as to the merits of a specialized, concentrated program vs. the merits of a broad general education, the merits of some particular group of subjects vs. some other group, etc.

More Coordination Needed

This discussion of an educational program for potential purchasing agents makes no attempt to decide such issues. Rather, it presents the considerations affecting such a program (1) at the college level, (2) in supplementary and/or refresher courses at the evening school or university extension level, and (3) in the selection of various methods of in-service training.

The National Association of Purchasing Agents

Agents and various regional associations have made great strides in improving the basic college courses for prospective purchasing agents. Yet something is still lacking in the educational approach as it is presently given.

Too little thought is given by schools to the coordination of the various phases of business knowledge. Each phase is given as a separate entity, with the result that students tend to absorb and then quickly discard, as final examinations are passed, the major part of this "compartmentalized knowledge". Very little of the material is retained for further use or application in other courses, except perhaps for a few rudimentary tenets such as "the law of supply and demand".

In addition, it is quite often found

that control belongs solely to the purchasing department "with a few minor exceptions", while in a course on production management, the text and lecturer state just as positively that these functions are prerogatives of the production department, also "with a few minor exceptions". Granted that thousands of variations from the prescribed theoretical arrangement doubtless do exist, situations such as this cannot help but result in confusion and uncertainty in students' minds as to what is the "true" picture, applicable to the majority of cases.

This type of contradiction and conflict appears between the teaching of purchasing and the teaching of many other phases of business, such as accounting, salesmanship, personnel, etc., and they in turn have their own teaching discrepancies.

Only a decade ago, in the conversion and expansion stages of the war production program, industry's requirements of purchasing personnel tripled almost overnight. As hundreds of inexperienced persons came into the purchasing field, attention was sharply focused on the need for sound educational background and intensive training courses to fit them for their new responsibilities.

If we are again faced with the necessity for full-scale industrial mobilization, that situation may soon be repeated. Much has been accomplished in the meantime, but much still remains to be done.

This timely article considers education for purchasing at the college level, in extension courses, and in-service training. It is one of the prize winning papers in the Boffey Memorial Award Contest sponsored by the Educational Committee of the National Association of Purchasing Agents. The author has been a student of purchasing at the University of California.

to be the case that knowledge which is retained from one course will conflict with the material as given in another course. For example, a text on purchasing, and the lecturer in the course, may state that the functions of stores and inventory con-

when compared with each other. This sort of thing is unfortunate not only for the students, but also for the purchasing profession as well, because it tends to paint an erroneous picture of purchasing which may well bias the thinking of some

of "tomorrow's executives" who will be going into other phases of business. It does not tend to enhance the standing of the profession, nor will it help to promote harmony and co-operation between purchasing and other phases of business.

Purchasing itself obviously does not constitute the whole business curriculum for any college student. In addition to the subject of purchasing, which should be the focal point of knowledge for prospective purchasing agents, many other subjects must be taught which will give the student a broad understanding and grasp of the significance of the socio-economic forces which will react to and affect his own activities in purchasing.

Business management, in which purchasing is a definite part, is largely a social profession. Though it is true that many technical subjects must be met and mastered by purchasing agents in many fields of enterprise, it is just as true that the purchasing agent, in his relations with suppliers and as administrative head of his department, must deal with people just as much as, if not more than, other branches of management. Vocational education alone falls far short of training truly professional men.

What Courses Are Essential?

What subjects should constitute a course in business education is a point of contention between many business men and educators. The Society for the Advancement of Management recently made a survey study of "Management Education". The report states:

"The difference in relative importance attached to the various subjects or courses by business executives and college professors are strikingly great in many cases. They seem, without question, to reflect a fundamental difference in the mental approach to business problems. The business executive thinks in terms of group activities, teamwork, organization, employee and public relations, selling, and making decisions quickly in the face of rapidly changing situations. College professors, even in most colleges of business administration, naturally have the 'academic' approach in their fields, and are apt to teach their students to think in the academic pattern."

Every business organization is in itself a social group, in which individual differences must constantly be resolved by bargaining and compromise. The academic scholar's training, with its stress on individual thinking and laboratory methods of

working with tangible measurable elements, does not encourage many of the necessary managerial characteristics. In the S.A.M. survey, the business community attaches very great importance to subjects having to do with leadership and salesmanship, while the teaching profession tends to discount them drastically.

Leadership is defined by Tread as "that combination of qualities by which one is able to get something done by others, chiefly because through his influence they become willing to do it." In this sense, leadership is almost a "must" for the purchasing agent. Salesmanship, too, though it seems to be the very antithesis of the principal function of purchasing, is also invaluable. By using the principles of salesmanship, the purchasing agent is not only aided in selling himself and his objectives to his superiors, colleagues, and subordinates, but is more adequately equipped to achieve the same effect with respect to his firm's suppliers, to promote better vendor relations, and make vendors more willing to comply with his needs and requests.

The S.A.M. survey shows that there is little agreement between business men and professors as to what subjects should be termed "essential". Only four subjects could be agreed upon with 60% or more of concurrence. These were, in order:

1. English Composition, Literature, and Public Speaking
2. Economics
3. General Accounting
4. Types of Industrial and Business Organization

The greatest differences between the executives' and professors' ratings as to essentiality of subjects were the following:

	Profes- sors	Execu- tives
Statistics	78%	32%
Salesmanship	27%	62%
Sales Promotion	22%	54%
Techniques of Leadership & Teamwork	23%	54%
Public Relations	23%	49%
Commercial Law	78%	53%
Employee Training	18%	42%
Budgetary Control & Procedure	27%	50%

When the ratings of "essential" and "desirable" are added together, a higher degree of agreement begins to show up for a considerable number of courses. With this combined rating of "essential or desirable", there is concurrence of 80% or more for the following, in addition to the four already cited:

5. Relation of Government to Industry and Business
6. Labor Relations
7. Commercial Law
8. Government
9. Corporation Finance
10. Cost Accounting
11. Production Methods
12. Psychology
13. Case Problems in Management Principles
14. History of Industrial Development
15. Advertising
16. Distribution Methods
17. Budgetary Control and Procedures



18. Taxes
19. Public Relations
20. Market Research
21. General Chemistry, Physics, Algebra, Geometry, Calculus
22. Industrial Psychology
23. Personnel Selection and Placement
(Purchasing was not included in this survey.)

Improving Business Education

Although this study dealt largely with the relationship between college education and business in general, it is equally applicable to the specific phase of business called purchasing. Four major obligations are indicated which the business community must face if it expects to receive more satisfactory executive material from the ranks of college students.

1. Business men and educators must get together to insure that more consideration is given to the needs of the business community and to what will be the needs of students themselves when they enter their chosen professions.

2. Ways must be found to inject outstanding business men into college teaching programs to help bridge the gap between academic theory and the practicalities of the business world.

3. Ways must be found to insure that professional educators are periodically given practical experience in the business world.

4. There must be more cooperation between the business community and educational institutions, and among the various fields of business, in teaching the varied subjects that constitute a curriculum in business administration. It definitely is to the interest of every field of business, and to business as a whole, to see to it that students receive a true picture of the purposes, functions, and relationships between each phase of business that is studied.

Supplementary Education

As is the case with regular college curricula, many of the same difficulties are found to be present in university extension courses, though not to as great a degree. Problems must still be solved with respect to methods of teaching, lack of cooperation between persons teaching the various phases of business, type of material given in the various courses, etc.

As is not the case with the typical college undergraduate, most of the students enrolled in university extension classes are more mature and possess varying degrees of practical experience. Since extension courses are usually taken on a part-time basis, the level of motivation for any

given class is usually at a higher pitch than if the same course were attended solely by undergraduates as a part of their regular curriculum.

To the college student, the immediate goal is the successful passing of his examinations; beyond this lies the goal of securing his diploma and a job; beyond this, ultimate goal is success at some job and eventual success in his chosen field. With the extension student, the first two of these incentives have already been hurdled. Almost without exception, the most common motive behind serious study at the college extension level is an occupational motive.

The occupational motive, however, is not the only principle involved in adult education, nor should management attempt to rely solely upon it. Many organizations and professional groups are willing to encourage the obtaining of education by their members so long as it moves along lines considered to be of immediate value to their work. Thus they agree to underwrite courses in accounting, personnel administration, salesmanship, purchasing, etc., but tend to look askance at other courses such as literature, history, or music appreciation.

For personnel who are of promotional calibre and who are trying to work their way up "the hard way" without benefit of formal higher education, other supplementary courses would be of great value. Such persons have usually acquired a first-hand working knowledge of materials, products and their applications, sources of supply, etc., but are lacking in the more diverse phases of knowledge so necessary to adequate performance of the purchasing function.

For personnel who have already received benefits of formal education, extension courses can be extremely useful as refresher courses in such subjects as economics, business fluctuations and forecasting, corporation finances, etc., or they can serve to further acquaint purchasing personnel with technical aspects of the products in which they are required to deal.

The content of material given in extension classes must hew fairly close to the line of practical fact, or the instructor will lose the interest of his class. Any false statements as to the duties and functions of any field, such as purchasing, will be just as disastrous as at the college level, if not more so. This danger may be nullified to some extent if the students have first-hand knowledge of the true relationships involved. Nevertheless, this is not something

which should be left to the vagaries of chance, with hopes that the students will have such desirable, forehand, practical knowledge. The purchasing profession, through its national and regional associations, should exert increasing effort toward eliminating such discrepancies by establishing closer liaison with professional educators and with the associations of various other professional groups that make up the business world.

Schools and colleges are usually only too glad to assist local agencies in conducting classes for which there is sufficient need.

Straight lectures without the benefit of supplementary classroom study or textbooks can also be used to advantage when sponsored under the auspices of university extension programs. Lectures are one of the most economical methods of instructions; they can be used effectively to impart a selected amount of information in a logical manner over a short period of time. The big disadvantage is that lectures tend to be too passive in nature, which is not conducive to thorough absorption of the material which is given.

Purchasing personnel should be encouraged to do outside studying. It not only can improve their knowledge of their particular field, but can also be of value in broadening their background and keeping them mentally alert and receptive to new ideas. Firms should make it a policy to keep on hand catalogues and brochures of all nearby educational institutions and assure that employees know that it is available.

Intra-Company Training

The purchasing profession must meet the need for efficiency in today's business world by initiating and supporting training programs if it is to maintain and improve its relative position in the business world. To maintain a high standard of personnel, there should be a consistent plan of selection and training for key positions and for progress upward through the department to positions of responsibility.

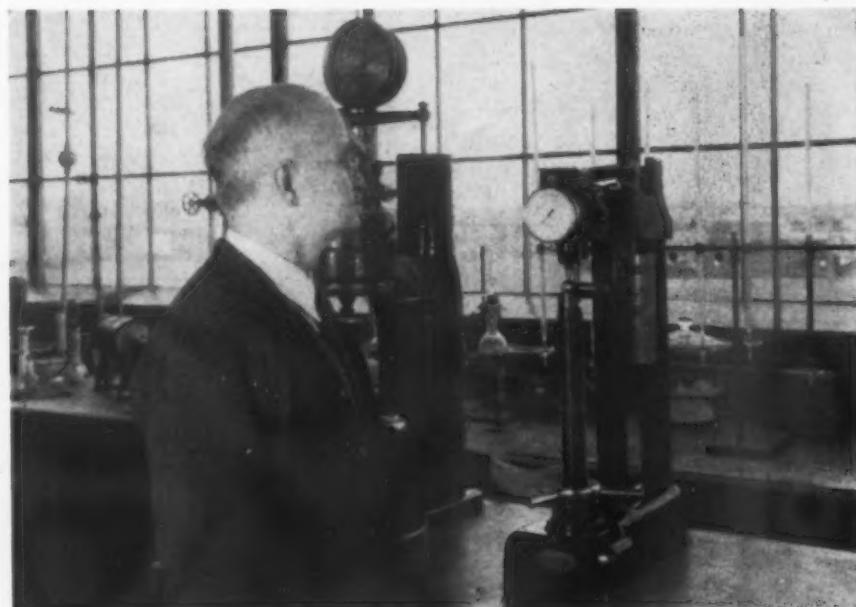
Any good in-service training program must be tailor-made to fit the needs of the individual business, which requires an intimate knowledge of the firm, its structure, and its aims and objectives.

The first step in setting up a training program is to determine the needs of the department. Factors in this analysis will include such things as the following: what are the replacement needs, at present and

(Please turn to page 282)

Inspection and Sampling Procedures

• By Theodore Wahler



INSPECTION, sampling and testing procedures are regarded as overhead in most plants, and can represent as high as 10% and even 20% of total production costs. Any consideration given to efficiency of procedure can mean higher profits to the alert and progressive businessman.

A manufacturer is faced with quality control from the instant raw materials are purchased. The degree of success of the entire manufacturing process depends to a very large extent upon this acceptance inspection policy. Careless or inadequate inspection can be extremely costly if large amounts of labor are to be expended on the material in the process of fabrication. The time to reject unsuitable material is before its value has been increased by the manufacturing process.

Proper and Consistent Quality

In many cases, especially when the item to be purchased is not of a highly technical nature, the determination of proper quality is left to the discretion of the purchasing agent. Even after he has made an intelligent choice of quality, he must take care to order only from suppliers who have in the past consistently supplied products of desired quality. An alert purchasing agent will also bear in mind that a successful purchase also depends upon a clear and concise description of quality, especially in the absence of formal specifications.

Mr. Wahler's paper won the first award of \$25 in the contest sponsored by the Educational Committee of the Milwaukee Purchasing Agents Association, for students in the Marquette University course in purchasing, which is also an Association project.

tently supplied products of desired quality. An alert purchasing agent will also bear in mind that a successful purchase also depends upon a clear and concise description of quality, especially in the absence of formal specifications.

There are several methods of describing the quality of an item. The most common methods are:

a. *By Analysis*—the determination of various physical properties or chemical compositions of an item. This method is most useful when such tests reveal data which can be directly related to the utility and value of the product. *Example*: The sulphur, ash, and B.T.U. content of coal and many others.

b. *By Physical Tests*—the subjection of a product to actual performance tests. These tests are usually accomplished by the use of testing machines. Physical tests afford a more direct and positive assurance of satisfaction. *Examples*: Tests for tensile strength, shearing strength, shock, ductility, torsion impact, etc.

c. *By Dimensional Measurements*—the determination of conformance with stated size within acceptable tolerances. This may be accomplished by any number of intricate measuring devices including such new devices as shadow projection which superimposes a magnified outline of the item on a master blueprint.

Manufacturer's Certification

The burden and cost of inspection can be reduced if the purchasing department takes the opportunity

nity, whenever possible, to purchase such products whose quality is guaranteed by the manufacturer or vendor. This eliminates the duplication involved in acceptance testing. This certification may be in the form of analysis reports on items such as coal, steel, etc., or by certificates of guaranteed performance issued by the manufacturer.

Testing Laboratories

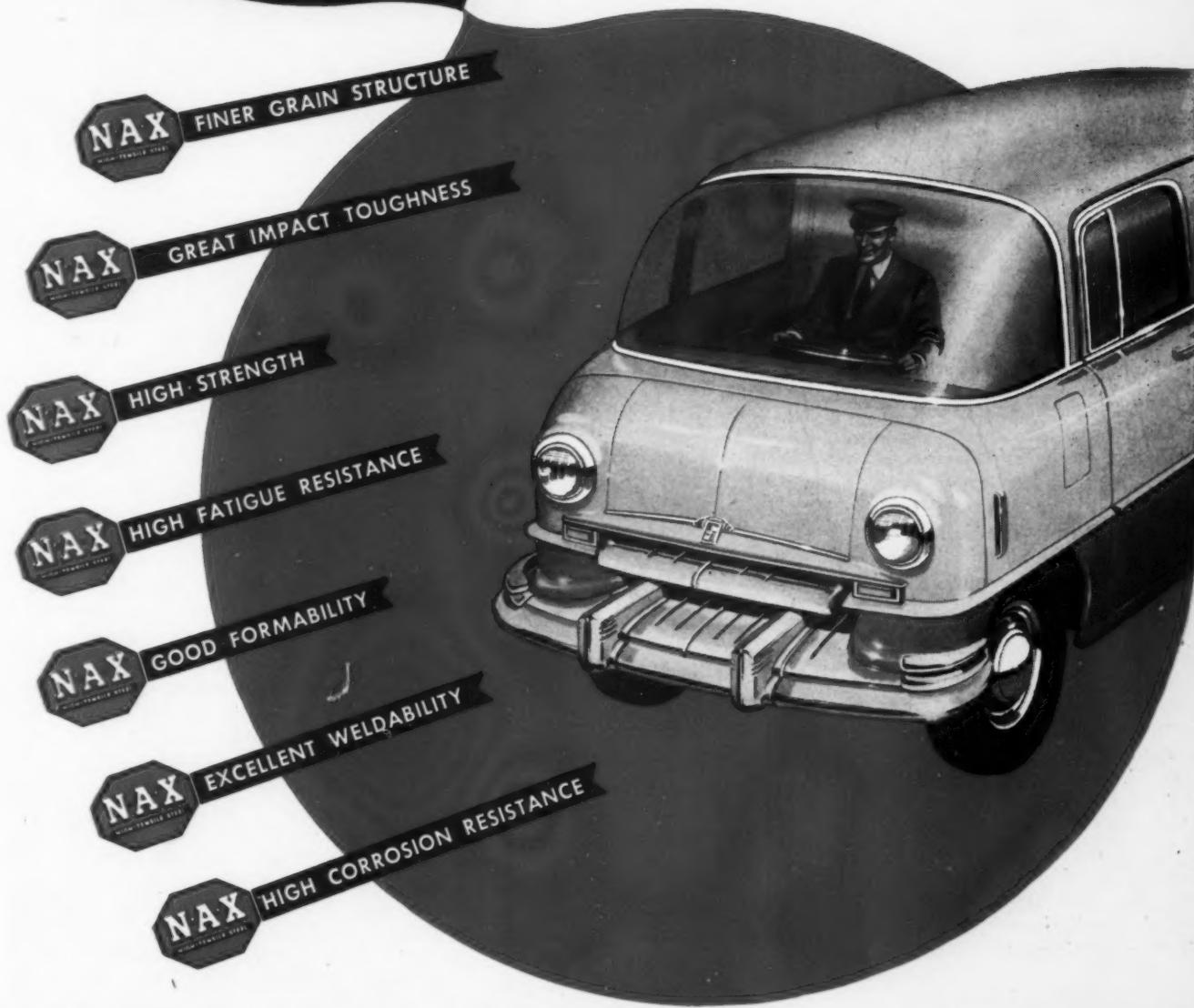
Certifications of a general nature are issued by independent testing laboratories such as the Underwriters Laboratories, Good Housekeeping Institute, etc. Independent commercial testing laboratories and services may be used for testing of special items, usually by agreement between the buyer and seller. Such establishments have the advantage of excellent facilities for a wide variety of tests. The United States Department of Commerce issues a Directory of Commercial Testing Services keyed to show what kinds of tests they are equipped to handle.

Receiving Inspection

Another general acceptance policy is the training of the receiving department to be ever vigilant for items damaged in transit, inade-



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quately packaged, or improperly labelled. Such information, if passed on to the buyer, will help him in his selection of suppliers for future purchases. Some items are of such a nature that they require no more check than a visual or manual inspection, either in the receiving department or in the shops. Care must be taken so that in any case the defects can be determined within a reasonable time after the shipment has arrived.

Process Inspection

Whenever the possibility of commercial adjustments are not adequate and where initial shipments of assured quality are essential, inspection at the supplier's plant before shipment may prove to be the most advantageous procedure. Such a method eliminates freight charges for return and reshipment in the event of rejection.

Screening

The inspection of each item and rejection of all defective items is called "screening". Such 100% inspection theoretically is the only program that can possibly guarantee the rejection of *all* defective items and *only* defective items. This method is used in cases when extreme precision is important, on safety equipment, or when each item represents a large unit cost. Obviously it can be used only when the quality test is non-destructive. However, perfection can be approached only if suitable automatic machines are available to do the inspecting or the inspector is not subjected to a load so excessive as to impair his accuracy. A statistical study made at the Frankford Arsenal, Philadelphia, indicates very clearly that the percentage of items classified erroneously increases sharply with the volume of inspection. The inspector's efficiency is bound to go down when operations are repeated over and over. For instance, one inspection expert cites a case in which a recheck of inspected parts showed that inspectors had passed 22% defective material. However, the nature and importance of the item may warrant the inspection of every item not only once but two or three times, expressly to eliminate the weakness of the human element.

Sampling Inspection

In a great number of cases, 100% inspection is not necessary, and an adequate control of quality may be

obtained by taking a statistically determined portion of the total quantity and subjecting this portion or sample to tests.

We should first consider the concept of "quality of a lot", since the purpose of an efficient sampling plan is to accept lots of high quality and reject lots of low quality. There are many ways of describing the quality of a lot of product with respect to the characteristic or characteristics being inspected. The following are perhaps the most common:

- a. The average of the characteristic among the items in a lot, the characteristic being measured along a scale (arithmetic mean).
- b. The variability of the characteristic among the items in a lot, the characteristic being measured along a scale (standard deviation).
- c. The ratio of the variability to the average of the characteristic of the items in a lot (coefficient of variation).
- d. The average number of defects per item in a lot (defects per item).
- e. The percentage of defective items in a lot (percentage defective).

Gradation of Quality

Each of these methods gives a gradation of quality. The line between lot quality that is considered high and lot quality that is considered low depends largely on the use to be made of the product.

The formation of a lot for inspection purposes is another point of consideration. Generally, we can state that care must be taken to form inspection lots of items with the same quality as determined by such factors as, same batch of raw material, material produced from the same machine, same production line, etc. The average quality of accepted products will be higher if this homogeneity is looked for.

Statistical Method

Sampling inspection by a statistical method may appear to be too involved to be of any use to the uninitiated, but actually, with a little study, it is not as complicated as it first appears. Statistical sampling is merely the application of measurement to chance. Much of its success depends on ordinary common sense. It is not hard to see that to make any sampling plan work care must be taken in choosing a sample that represents the entire inspection lot. Some rules to follow are:

1. A representative of the consumer must take the sample.

2. A sample must be taken at random so that the results are not biased.

3. The size of the sample must be determined and its accuracy established in degrees of probability.

It must be clearly understood that no sampling plan can assure the complete separation of defectives from non-defectives among the submitted items, for not all of the items are inspected. When these risks are balanced against the great saving in cost, sampling inspection will generally be preferred to screening.

Acceptance or Rejection

The acceptance or rejection of an entire inspection lot on the basis of the quality of a sample drawn from that inspection lot provides a strong incentive for the supplier to improve the quality of his product.

One of the most delicate problems in testing arises when a shipment is rejected on the basis of the sample tested, and the producer demands resampling and retesting, contending that the sample test was not fairly indicative of the lot.

Charles B. Dudley, in his Presidential Address before the American Society for Testing Materials, covers the situation in no uncertain terms in citing his own philosophy and practice on the subject of sampling:

Mr. Dudley's Philosophy on Sampling

"The sample is but a very small fragment of the shipment, and a doubt may fairly be felt as to whether the whole shipment is like the sample. It is obvious that if the specification is intelligently drawn all the variations in the material, due to uncertainties in the process of manufacture or unavoidable errors of manipulation, are provided for in the sampling which it directs. This leaves only intentional or unintentional variations, introduced by the producer, to be provided against. Our position in regard to these has always been that if the producer was willing to take the risk of our getting our sample from one of these intentionally inferior parts of the shipment, with the rejection which would inevitably follow, we were willing to take the chance of getting a sample from a better part of the shipment, with the consequent acceptance of some inferior material. . . ."

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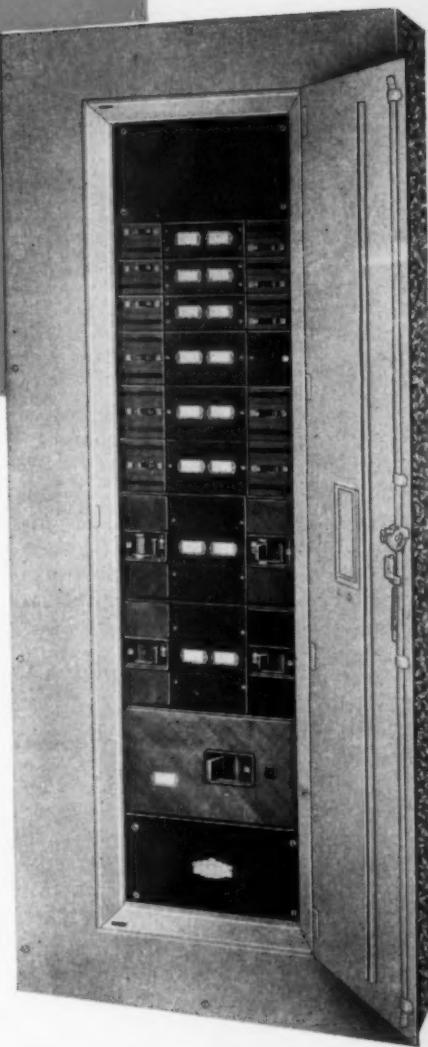
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There's a legal distinction between "title" and "possession"

When Goods are in Transit

How the interpretation of F.O.B. contract terms
is reconciled with buyers' and sellers' rights
under the Uniform Sales Act

By LEO T. PARKER

RECENTLY a reader wrote in part, as follows: "If goods are shipped F.O.B. the seller's location does the purchaser automatically take legal title to the merchandise the instant the shipment is delivered to the carrier? Under these circumstances does the buyer assume full responsibility for loss of or damage to the merchandise during its transportation? Also, can the seller regain title and possession of the goods during transit if he receives definite information that the buyer is insolvent? What is the legal effect of the Uniform Sales Act, sections 53 and 57, which deal with remedies of unpaid sellers, and which provide that in case of the insolvency of the buyer, the right of stopping the goods in transit is reserved to the shipper?"

Uniform Sales Act

The states of New Jersey, Connecticut and Arizona were the first to adopt the Uniform Sales Act. These states adopted the law in 1907. The last states to adopt and approve the Act were Arkansas in 1941 and Colorado in 1942. The District of Columbia was relatively late in adopting the Act and did so in 1937. Other states adopted and approved the Act in different years after 1907 and previous to 1941.

Section 57 of the Uniform Sales Act provides that when the purchaser of merchandise is, or becomes insolvent, the unpaid seller who has parted with possession of the merchandise may stop the goods in transit and have the carrier return the goods to the shipping point for possession of the seller. In other words, section 57 does not provide

that the seller may repossess the goods while "in transit" if the *title* to the goods has passed to the purchaser. This section clearly specifies the right of stoppage in transit when the seller discovers that the purchaser is insolvent and also the seller has "parted with possession" of the goods.

Seller Waives Lien

Section 56 of the Uniform Sales Act clearly specifies that an unpaid seller of goods automatically forfeits his right to a lien when he delivers the goods to a carrier without

right to sue and recover payment from the contractor.

For instance, in *Ligon v. Milholand*, 224 S. W. (2d) 825, the testimony showed facts, as follows: The Ligon Concrete Products Company, is a manufacturer of concrete building blocks. George Spruce, is a building contractor and also is president of the Arkansas Concrete Products Company.

Spruce made a contract with a property owner to construct a concrete building and furnish all materials and labor for \$3,800. During the progress of the construction of the building, the machinery of the Arkansas Concrete Products Company broke down and Spruce ordered the necessary blocks from the Ligon Concrete Products Company. These blocks were to be delivered on the site of the building.

When the property owner concluded that Spruce as contractor would not be able to complete the contract for \$3,800, the work was stopped and the property owner decided to finish construction of the building. But before starting the work the property owner demanded Spruce to obtain waivers of liens from all companies which previously supplied materials. When the last load of building blocks was delivered, the Ligon Concrete Products Company's agent signed a waiver, as follows:

"Waiver of Lien—We, the undersigned, do hereby waive our statutory lien which we may now have on said property or may hereafter have on said property by virtue thereof and agree to look to the contractor personally for the payment of our claim or claims."



reserving title in the merchandise or without an understanding by *contract or otherwise* that the seller still retains a lien on the goods to secure payment of the purchase price.

Of course, a seller may make a valid contract under which he waives his right to a lien on the merchandise. This same law is applicable to materials used by a contractor.

According to a recent higher court a waiver of a lien signed by a seller, or supplier of materials, is valid but the seller or supplier still retains the

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SOME THINGS YOU OUGHT TO KNOW ABOUT OWNERSHIP OF PURCHASED GOODS

Does an unpaid seller automatically have a lien on merchandise without specifically reserving that right?

Who is responsible for payment if the seller has waived his right to a lien?

Can an F.O.B. contract clause be construed as a matter of price rather than delivery?

How does the liability of a private carrier differ from that of a common carrier?

Under what circumstances does a carrier have the status and responsibility of a warehouseman?

What are the purchaser's rights when seller refuses to accept return of goods on a rescinded contract?

Can a seller stop goods in transit to an insolvent buyer?

Does stoppage of a shipment annul the sale and restore title to the seller?

Can a seller stop delivery after a shipment reaches the siding designated in the bill of lading?

At what point does a seller lose his prior rights to merchandise over other creditors?

Are goods legally "in transit" while awaiting disposition in a carrier's warehouse?

When part of a shipment has been delivered, what is the status of a balance still in the carrier's possession?

either expressed or implied, the title to merchandise may pass *at once*, before the goods are delivered to a carrier, and immediately after the contract of sale is signed by the buyer and seller, or the title to the goods may not pass to the purchaser even after the latter took possession of the merchandise.



Another important point of law is that when a shipment is made F.O.B. the seller's location the buyer assumes full responsibility and liability for all accidents, damage, loss, delays and theft of the merchandise caused by the carrier.

Hence, the purchaser becomes a litigant in event suit is necessary to recover from the carrier.

Common Carrier Liability

It is important to know that if the goods are shipped by a common carrier, such carrier is liable for all loss or injury to shipped goods *not* due to (1) an act of God; (2) the public enemy, in time of war; (3) the inherent nature or peculiar qualities of the goods; or, (4) the act or fault of the shipper. Also, it is well settled law that under all circumstances a common carrier is liable for damages to shipped goods caused by negligence of its servants or employees. In other words, the liability of a common carrier is unusual and extraordinary, and based upon its legal duty to the public. Hence where a carrier attempts to avoid liability for loss or injury to shipped merchandise it is bound to prove its case, or contention, otherwise it will be held liable.

For instance, in *Noel Bros. v. P. Ry. Company*, 133 So. 830, it was shown that a fire started in a nearby warehouse and spread rapidly to merchandise in custody of a common carrier, destroying the merchandise. The shipper sued the common carrier for damages. The carrier attempted to avoid liability on the contention that its negligence was not in any degree the cause of the loss. However, the court held the shipper entitled to a favorable verdict, and said:

Later the Ligon Concrete Products Company accepted a check from Spruce in payment for the blocks, but when the check was returned unpaid the Ligon Concrete Products Company sued the property owner to recover payment for the blocks on which the waiver of lien was signed, and asked the court to grant a lien on the property to secure payment.

The higher court refused to grant a lien saying that when a seller or supplier executes a waiver of a statutory lien and then later accepts a contractor's check as payment for the materials, the waiver is valid and effective whether or not the check is honored by the bank on which it is drawn.

The court held also that the waiver is valid, whether or not the seller or supplier receives payment from the contractor, or elsewhere, and the seller must sue and recover pay-

ment from the contractor, and not expect payment from party named in the waiver. Hence, if the contractor is insolvent the seller or supplier must suffer the financial loss.

When Title Passes

Generally speaking, delivery of goods by a seller to a common carrier for shipment to the buyer F.O.B. the purchaser's location automatically passes title to the merchandise. However, there are exceptions to this rule of law.

For example, in *Lansdowne Distiller*, 64 Atl. (2d) 727, the higher court held that the term F.O.B. Terre Haute, Indiana, used in a contract for the sale of merchandise, and which appeared *immediately after the contract price*, had reference to the price and not to delivery of the merchandise. In other words, this court held that by agreement,



"I wasn't asleep," said the Dormouse

EVERY boy and girl knows the drowsy Dormouse of Alice in Wonderland. He was elbowed and pinched by the Mad Hatter and the March Hare as he mumbled in his sleep at the tea party.

But our young people aren't so well versed in everyday economics. They have a sadly distorted picture of the profits of business. They don't realize why profits are necessary, how small they are, or how they are divided.

For instance, in a recent survey of high school seniors, it was discovered that they believe over 50% of the sales dollar is profit and they think stockholders receive 24% of it. Actually business profit averages less than 8%, with less than 3%

distributed as dividends. Business uses most of its profit, moderate as it is, for new plant and equipment, to improve products and to make more jobs.

Misconceptions among our youth bode ill for America's future. They open the door for too ready acceptance of dangerous isms and false foreign philosophies. Such misunderstanding of economics can be corrected only with facts supplied by business itself. You as a leader in your community must share this responsibility.

The American business man must not allow himself to be cast in the role of the Dormouse, pinched and pilloried by the March Hares of communism and the Mad Hatters of the "everything for nothing" state.



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"The carrier must prove the precise cause of the loss. It will not suffice to prove merely due diligence, but the carrier must prove, moreover, that the accident was occasioned by a fortuitous event, or by irresistible force, or by a defect of the thing itself, or by a fault of the shipper . . ."

Private Carrier Liability

The higher courts agree that a private or contract carrier is liable for loss, damage, destruction, or theft of shipped merchandise *only* where the testimony shows that the carrier was negligent, or failed to exercise "ordinary" care to safeguard the shipment. Hence, while a common carrier is liable practically as an insurer of shipped goods, the legal responsibility of a private carrier is much less. Very frequently it is necessary for the courts to determine whether a carrier is a "common" or "private" one.



Legally a common carrier is *any* carrier which holds itself out to the public as being ready to transport goods for all who demand the service. However, a private carrier is one who transports goods for *only* selected persons or firms. For example, the owner of a motor truck whose business is transporting merchandise exclusively for one or a few more shippers is a private carrier.

See *Zell v. Industrial*, 65 Pac. (2d) 1429. In this case it was shown that a truck owner operates several motor trucks and transports merchandise for many customers on contract, but he does *not* haul generally for the general public. In other words, the owner of the trucks transports merchandise for customers he wanted to haul for and refused to haul for all others.

The legal question arose whether or not the truck operator is a "common carrier." In holding the operator a private carrier, the court said:

"A common carrier serves the general public . . . The truck operator here offered no such program

of service, as he only served those with whom he had pre-existing contracts. He is a 'contract carrier'."

The leading case of *Cook Transfer Company*, 13 Pac. (2d) 549, clearly illustrates the liability of a private carrier. In this case the driver of a motor truck owned by a private carrier failed to place a cover or tarpaulin over merchandise when it rained. The higher court held the carrier liable for damage to the goods because the driver was negligent in failing to use ordinary care to protect the goods against injury.

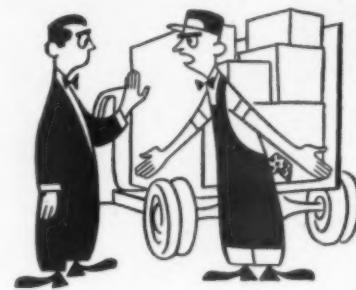
Under certain circumstances a common carrier's liability is automatically reduced to that of a private carrier or a warehouseman, under which conditions the carrier is not liable for loss of or damage to shipped merchandise unless the purchaser who has taken title to the merchandise proves that the loss or damage resulted from *negligence* or lack of ordinary care on the part of the carrier.

See *Dohrmann Hotel Supply Company v. Owl Transfer and Storage Company*, 143 Pac. (2d) 441. Here a shipper notified a trucking company to call for merchandise for transportation to a named consignee. When the goods arrived at destination it was rather late. The trucking company was instructed over the telephone by the consignee to keep the goods on the truck over night and make the delivery the following day. The trucking company as instructed kept the goods in its garage for the night. During the night the garage burned and the merchandise was destroyed.



In the subsequent litigation, the higher court decided that in view of this testimony the common carrier's liability was changed to that of a warehouseman, under which circumstances the carrier was not liable unless the shipper or consignee proved that the fire resulted from negligence of the carrier. This court said:

"Having concluded that a status of the respondent (carrier) became that of a warehouseman upon its tender of the goods to the consignee. . . . The duty was . . . upon the appellant (consignee) to . . . show that the fire resulted from some negligence of the respondent (carrier)."



For comparison, see *Drug Company*, 125 So. 764. Here the higher court held that a seller must prove that the purchaser took legal title to the goods the instant delivery was made to the carrier. Otherwise the seller cannot sue and recover the contract price from the purchaser, and neither may the purchaser sue the carrier and recover for damages or loss of the shipped goods.

When Seller Has Lien

Section 54 of the Uniform Sales Act clearly explained the circumstances under which a seller has a lien of goods unpaid for by the purchaser. This section states that the unpaid seller has a lien on such merchandise where (1) the goods were sold without a credit agreement, since the courts hold that where no credit is stipulated cash payment is implied; (2) where the terms of credit specified in the contract of sale have expired; (3) where the buyer becomes insolvent; (4) and where the seller has possession of the goods for himself or as agent or employee of the purchaser.

Possession Is Necessary

Generally speaking, the validity of a lien on merchandise is forfeited by dispossessing of the goods by the holder of the lien.

For example, in *Weaver*, 209 Pac. (2d) 830, a statute was litigated which explains the circumstances under which a buyer has a legal right to rescind a contract of sale, and refuse to accept delivery of merchandise. A buyer complied with this statute and decided to rescind the contract. He offered to return the goods to the seller.

In subsequent litigation the higher

for PROOF that General Boxes CUT COSTS...let's CHECK THE RECORD

No. 7105

Gross Shipping Weight	
* Old Package.....	410 lbs.
* New Package.....	364 lbs.
Weight Saving.....	46 lbs.

No. 7038

Gross Shipping Weight	
Old Package.....	120 lbs.
* New Package.....	104 lbs.
Weight Saving.....	16 lbs.

No. 7023

Gross Shipping Weight	
Old Package.....	39 lbs.
* New Package.....	34 lbs.
Weight Saving.....	5 lbs.

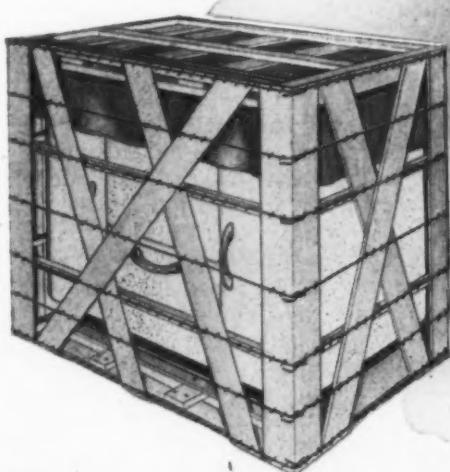
No. 7147

Gross Shipping Weight	
Old Package.....	95 lbs.
* New Package.....	83 lbs.
Weight Saving.....	12 lbs.

General Engineered CONTAINERS PROVIDE AVERAGE SAVING OF 19.75 LBS.

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Wirebound
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General
Nailed
Box



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Corrugated
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General
Cleated
Corrugated
Container



General
All-Bound
Box



Generallift
Pallet and
Pallet
Box



General
Watkins-
Type
Box

court held that immediately after the seller refused to accept redelivery of the merchandise, the purchaser held the goods, as bailee, for the seller and that the goods were subject to a lien of the purchaser for certain charges and part of the purchase price already paid by the purchaser. Also, this court held that the purchaser forfeited his lien if he gave up possession of the merchandise.

Right of Stoppage

Section 53 of the Uniform Sales Act provides that a seller may stop goods in transit if he knows or learns that the buyer is insolvent, and further that this right is not adversely affected although the title to the goods passed to the purchaser on delivery to the carrier. However, contrary to the belief of a majority this Section does not give the seller the legal right to regain title to the merchandise.



As above mentioned, the Uniform Sales Act was approved by New Jersey May 7, 1907. In the year 1919 the District United States Court held that although a seller ships goods F.O.B. the seller's location, and therefore parts with legal title to the goods, and later learns that the purchaser is insolvent the seller may stop the goods in transit, but the purchaser still retains title to the goods. Also, see Ellis, 160 Atl. 702, and 84A 317. In this case it was shown that a carload of tomato pulp was sold on credit, and it was being transported by a common carrier to the purchaser when the seller learned that the purchaser was insolvent. As to the right of the seller to stop the goods while in transit, although legal title had passed to the buyer, the higher court said:

"While the right to stop delivery of goods sold on credit is predicated on insolvency of the buyer, yet neither insolvency nor bankruptcy of the buyer works a rescission of the

contract, and stoppage in transit does not annul the sale or divest the purchaser of title to the goods (in the purchaser) which passed on delivery to the carrier."

This court also held that although the buyer is insolvent and the title has passed to the purchaser, while the seller may stop the goods during transit the seller cannot regain legal title to the goods but he may have a lien on the goods to secure the purchase price.

This court held also that when a carrier places a car containing merchandise on a siding, designated in the bill of lading, the transit is finished and the seller has no legal right to stop the merchandise from being delivered to the purchaser, and the seller has no great nor prior rights than other creditors of the insolvent purchaser.

See also Eddy, 72 United States 481. This court said: "When the carrier placed the car on the siding, its duty as a carrier was ended."

When Goods Are In Transit

Modern higher courts consistently hold that under no circumstances may a seller stop or take possession of shipped merchandise not in transit.

Section 58 of the Uniform Sales Act provides that goods are "in transit" from the time when they are delivered to a carrier, or other person or company which acts as agent for the seller, until the moment the buyer takes delivery from the carrier or other person entrusted with transportation and delivery of the goods. Also, the goods are "in transit" if the buyer refuses to accept delivery and the goods remain in custody of the carrier.

According to a recent higher court the goods are not "in transit" after the purchaser has accepted delivery of the goods at the point of destination or at any intermediate point during transportation from the shipping point to the point of delivery specified in the bill of lading.

However, the goods are considered as being "in transit" while in the carrier's warehouse awaiting delivery to the purchaser who has received a notification from the carrier that the goods are ready for delivery.

Also, if the carrier wrongfully or illegally refuses to make delivery of the goods to the buyer, the goods are "in transit" when in the carrier's warehouse awaiting further disposition.

Another important point of law is that if a part or portion of a shipment of merchandise has been delivered to the purchaser, the part or

portion of the shipment which remains in possession of the carrier is legally "in transit". See First National Bank, 43 Pac. (2d) 1078; and Rome, 110 N. E. (2d) 765.

The Forwarder's Status

Still another important point of law is that once an agent of the buyer takes possession of shipped merchandise, the same no longer is in transit. Hence, where a forwarder or warehouseman takes goods from a carrier by authority of the purchaser, the goods are not "in transit" while being transported by the forwarder or warehouseman from the carrier to the purchaser. See Stork, 271 Fed. (2d) 279.



According to a recent higher court, when the testimony shows that a forwarding shipper or agent has no legal interest in the shipped goods, and merely acts as agent for the shipper, the title to the merchandise rested with the consignee, who is the proper party to maintain a suit for loss or injury to the shipped merchandise.

This situation, however, never exists when the forwarder assembled the various lots of goods for shipment in carload lots and through bills of lading assumed the responsibility for the safe transportation of the merchandise from point of receipt to point of destination. Under the latter circumstances the forwarder automatically assumes "common carrier" liability, and may sue the transporting carrier for damages if the shipment is lost or injured. But before the forwarder may sue the transporting carrier for benefit of the shipper or consignee evidence must be produced which proves that the forwarder has proper authority. See Merchant Shippers Ass'n v. Kellogg Express & Draying Company, 164 Pac. (2d) 852.

Unpaid Seller

Section 53 of the Uniform Sales Act relates specifically to "unpaid" sellers.



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According to a recent higher court an "unpaid" seller is one who has not received payment for the goods, or who has not been offered or tendered the full contract price. Also, when the goods are sold under a conditional contract of sale, the seller is deemed by law to be an unpaid seller if the testimony shows that the purchaser breached his obligations as to payment, as a failure to make even a single installment payment when due. Also, a seller is unpaid if the purchaser makes a void payment, as a bank check not honored by the bank on which it is drawn. See Taylor, 212 N. Y. S. 133; United, 175 N. Y. S. 177; and Smith 230 N. W. 847.

The law is well settled that where title to merchandise has passed to the buyer, yet the seller can refuse to allow or permit the purchaser to take possession of the goods still in his possession. Obviously, if the purchaser already has possession of the goods, and also legal title thereto, the

situation is different. The seller has a lien on these goods to secure payment, but the seller's lien is limited and surpassed by liens of other creditors who may have prior and superior liens. See Coot, 84 Atl. 317. Quite obviously, a lien under Section 53 of Uniform Sales Act is not nearly so broad nor effective as a lien secured by a chattel mortgage. This is so because a properly recorded mortgage is effective as to all persons in all cities, counties, and states in the United States without any notice to such persons, whereas a lien for unpaid balance on the purchase price of goods now in possession of the buyer is limited and in many instances rendered void by superior liens on the goods.

Superior Lien

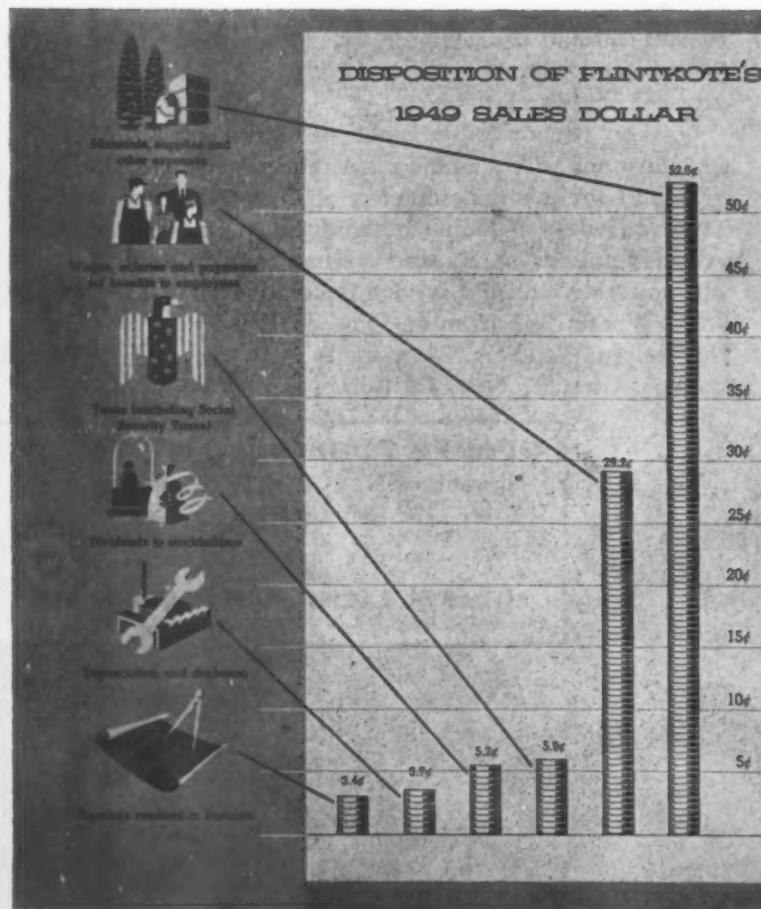
On the other hand, where the testimony shows that an "unpaid" seller still has legal possession of the merchandise his lien is superior,

although actually the title to the merchandise has or has not passed to the buyer. See Thompson Company v. Brown, 171 Minn. 483.

If the testimony shows that a buyer made a contract to purchase merchandise when knowing that he could not pay for the merchandise, he is guilty of fraud and is subject to all laws, restrictions and penalties of any other person who obtains merchandise with fraudulent intent, or through direct fraud. See Rockford, 116 Fed. (2d) 583.

Under the latter circumstances the seller may sue and take possession of the goods in transit, while in possession of the purchaser, or while in possession of one to whom the fraudulent purchaser sold the goods. Under the latter circumstance the seller must prove that he performed no act or other deed calculated to induce the last purchaser to believe that his immediate seller could give or transfer a good title.

Purchase Expenditures Exceed All Other Items



THE current annual report of The Flintkote Company graphically portrays the distribution of the 1949 sales dollar in that company's operations. In six major classifications of expenditure, the purchasing factor—materials and supplies—not only heads the list as the largest single item, but is greater than all other factors combined, representing 52.6¢ of every sales dollar. The analysis is based on a 1949 sales volume of \$67.8 million.

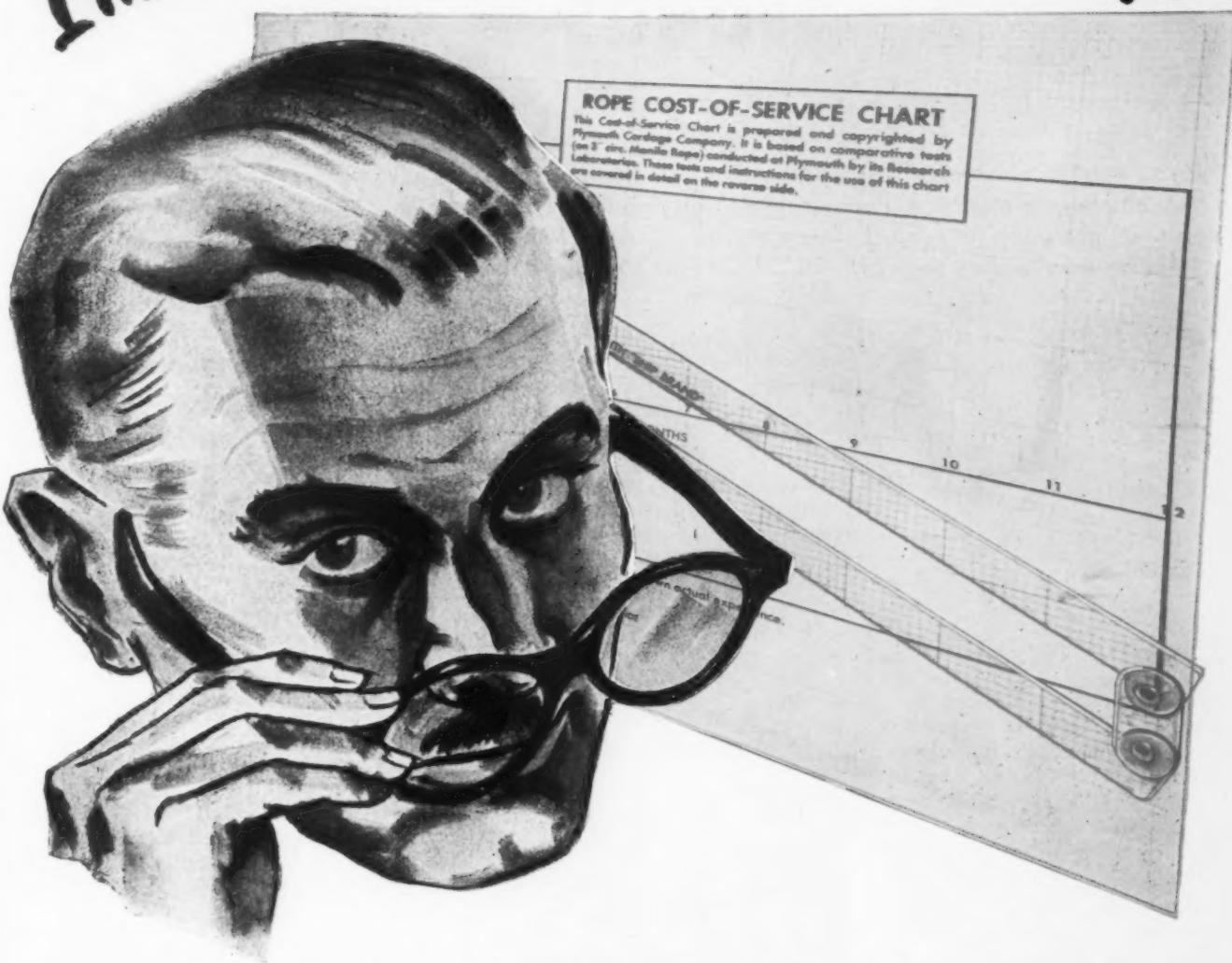
The complete breakdown, illustrated in the chart herewith, is as follows:

Materials and supplies	52.6
Wages, salaries, benefits	29.2
Taxes	5.9
Dividends	5.2
Depreciation, depletion	3.7
Earnings retained in business	3.4

The importance of the material and supply factor in the analysis of product and operating cost in thousands of representative manufacturing industries emphasizes the vital role and responsibility of the purchasing department in the profit picture.

"Remember me? Just a short time back I said 'Manila's manila, isn't it?'"

"I hadn't looked at rope costs that way!"

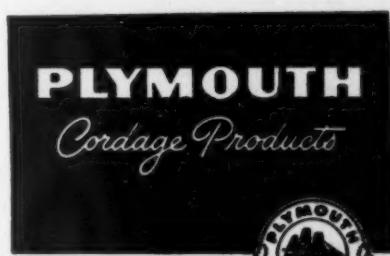


... perhaps you, too, had thought that all manila ropes were very much alike ... that the best price was the best buy. Plymouth's cost-of-service chart proves otherwise! It will surprise you to find out from the chart how ridiculously cheap you'd have to buy other ropes in order to match Plymouth's low cost to use. This chart proves conclusively SHIP BRAND Manila's greater strength, its longer life, its far lower month-to-month service cost. In addition, you can be sure that SHIP BRAND's extra strength and life means extra safety—all the time.

PLYMOUTH CORDAGE COMPANY, PLYMOUTH, MASSACHUSETTS

SEND FOR FREE CHART

—see proof of *Plymouth's longer life and operating economy*—figure how much less you'd have to pay for other ropes to match *Plymouth's low cost of service*. A post card brings your free copy—a modified reproduction of the one shown above.



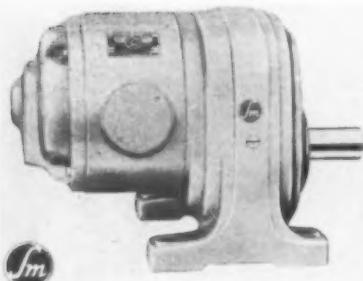
THE ROPE YOU CAN TRUST BECAUSE IT'S ENGINEERED FOR YOUR JOB

New Products Ideas



If you want more information on New Products items, just list the item numbers in a letter to Purchasing Reader-Service Department on your company letterhead. This also applies to Catalogs and Bulletins described on Pages 19, 20, 22, 24 and 164. See Page 19.

Power Drives



Sterling Electric Motors, Inc., Los Angeles 22, Calif., is making its Slo-Speed geared electric power drives in the "splash-proof" design for horizontal floor mounting. This design is suited for locations subject to direct streams of water or other liquids. The motors are built with single or double reduction gears, providing speeds from 780 rpm down to 20 rpm, in ratings $\frac{1}{2}$ hp to 15 hp inclusive. One piece cast iron stator frames and one piece cast end bells with integrally cast baffles (no loose shields or deflectors) provide protection in all kinds of industrial plants.

No. 101—For further information see Page 19

Instrument Oils

Gulf Oil Corporation, Gulf Building, Pittsburgh, Pa., has introduced two new "synthetically tailored" lubricants for use in virtually all fine precision instruments. Called Special Instrument Oil and Micro Bearing Oil, they are the results of research by Elgin National Watch Company working in collaboration with the Gulf Research Fellowship at Mellon Institute of Industrial Research. The two oils are wholly

synthetic products with special properties which adapt them particularly to the lubrication of small, delicate, low torque bearings encountered in precision instruments. Both are said to have practically none of the ordinarily desirable creeping or spreading tendencies found in conventional petroleum oils. This enables them to "stay put" over long periods of time.

No. 102—For further information see Page 19

Materials Handling Box



A collapsible, 2000 lb. capacity materials handling box, which may be erected in less than 20 seconds, is made by Phillips Mine and Mill Supply Co., 2305 Jane St., Pittsburgh 3, Pa. Designed for storing and transporting bulk materials and parts, the Model B-20 "Phil-Box" folds down to a height of only 9-1/16" with a perfectly level top surface. In the erected position the box stands 28-1/8" high, with a 49" x 37" x 24" interior. A fork lift truck or pallet truck may enter from any side. Also available in Model B, with 5000 lb. capacity.

No. 104—For further information see Page 19

Automatic Hoist



A new automatic hoist operated by an electric power unit connected to a six or eight volt battery is offered by Eastern Hoist-O-Matic Company, 342 Madison Ave., New York, N. Y. Loading and unloading of heavy machinery, etc., is handled by the hoist and boom unit through push-button control on cable. The boom, which can be used on open bed or van truck, swings in a full circle. Cable lift travels at 6' per second. Overall height of the unit is 6'. Standard cable length is 40'. With split block (illustrated) load capacity of lift can be increased to 2000 lbs. "A" frame models are also available.

No. 103—For further information see Page 19

Hand Truck

A new "Hallowell" Uni-Truk hand truck has a unique, triple welded angle construction of the nose, which eliminates danger of ends of side bars tearing loose. It is described as inexpensive, light in weight, and well-balanced for nimble handling of all but the heaviest hand truck jobs. It has a steel channel, all-welded, single handle, frame; steel channel, curved cross-members; heavy, pressed steel nose. (Please turn to page 130)

Consider the advantages of UNIT HEATING

Heating comfort Unit heaters provide quick heating from a cold start. Desired temperatures are easily maintained within a close range. Heat is uniformly distributed in the working zone by forced air circulation. It is a very flexible system because different or changing heating requirements are easily satisfied by means of different models, a range of capacities, single- or two-speed motors and individual thermostatic controls.

Low first cost Unit heaters are so efficient and so compact that their heating capacity is often equivalent to the capacity of cast iron radiation or pipe coils of twice the cost. Additional savings are effected because the system requires a proportionately smaller amount of pipe, fittings and accessories.

Economy of operation Heat is forced down to the working level . . . not banked uselessly at the ceiling level. Heat is turned on and off merely by throwing a switch either manually or automatically by simple thermostatic controls. The rapid response means that heat is furnished only when and where it is wanted . . . no heat is wasted.

Adaptability to equipment and floor layout Unit heating is widely used in industrial plants and warehouses, garages, stores and public buildings. The units and the simple piping are overhead where they do not interfere with arrangement of operating machinery or equipment and do not take up valuable floor or wall space. Units are easily relocated at any time to meet changes in layout.

Thermolier unit heaters have important construction advantages The design of Thermolier unit heaters is the product of Grinnell Company's ninety-nine years of heating experience. Those responsible for heating like Thermolier's durability, freedom from maintenance troubles and dependable operation. Typical of its construction features is the patented internal cooling leg which permits the use of a plain thermostatic trap, the simplest, least expensive kind of trap. Other features are built-in drainage, continuous rated capacity and provision for expansion of U-tubes.



GRINNELL

Thermolier unit heaters

Grinnell Company, Inc., Providence, R. I. Branches: Atlanta • Billings • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston • Long Beach • Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Pocatello • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

(Continued from page 128)
ribbed for strength; 6" diameter wheels with ball bearings and rubber tires, or 5" diameter with plain metal bushings, resilient rubber tread and hard rubber cores. The truck is made by Standard Pressed Steel Co., Jenkintown, Pa. Bulletin 757 available.

No. 105—For further information see Page 19

Grinding Machines



The Landis Tool Company, Waynesboro, Pa., has announced a new line of 10" and 14" plain and semi-automatic grinding machines. Featured improvements are a new heavy bed, new operating controls, new way lubrication methods and new telescoping covers for the carriage ways. Lengths between centers of 18", 36", 48", 72", 96" and 120" are available in both 10" and 14" swings. This size precision grinder, according to Landis, is intended to be used for medium weight work pieces that must be cylindrically ground to a high degree of finish and accuracy. Grinding operations for which it is suitable include straight cylindrical, taper, shoulder, and with extra equipment, profile and angular grinding.

No. 106—For further information see Page 19

Furring Channel

Nailock Steel Division, The Sany-metal Products Co., Inc., 1698 Urbana Rd., Cleveland, O. has brought out a new type fireproof metal furring channel. Called Screwlock, it is designed for all types of suspended ceiling construction and for fastening all types of materials with screws. The channel is 2 3/4" wide, enough to meet the requirements for joining acoustical tile or other material end to end or side by side. A hanger clip attaches the channel to wood, steel or masonry supporting members. A coupling joins channel lengths. The channel is of 26-gage metal, perforated with depressed openings. All screws are guided into holes automatically. Single tiles may be replaced without disturbing adjoining ones.

No. 107—For further information see Page 19

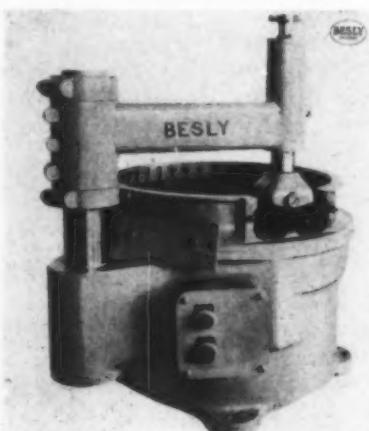
Filament Tape Dispenser



An all-metal unit for dispensing lengths of tough tear-resistant filament tapes is offered by Minnesota Mining and Manufacturing Co., 900 Fauquier St., St. Paul 6, Minn. It can be used with "Scotch" brand filament tapes and other hard-to-cut tapes. A thumb-operated trigger presses the cutting blade against the tape to make the cut. When the trigger is released the blade retracts so that it cannot cut accidentally. Dull blades can be changed easily. Five replacement blades are included with each dispenser. The unit can be used with tape rolls up to 72 yards long, and accommodates tape widths from 1/2 to 1 inch.

No. 108—For further information see Page 19

Bench Model Grinder

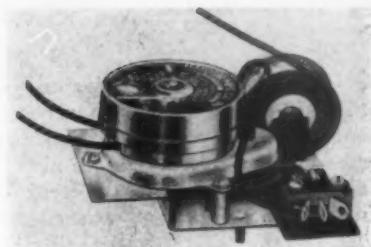


Charles H. Besly & Company, Beloit, Wis., says it has met the demand for free-hand grinding of castings, forgings, stampings, plastics, etc., where little stock removal is required, with its #318-18" vertical spindle grinder for light work. This inexpensive bench model grinder is only 31" high and 28 1/2" wide overall. If facilities for bench mounting are lacking, it can easily be installed on a stand of suitable height. As all grinding is done in

the horizontal plane, easier handling is claimed as well as increasing production and safer operation. Dressing of the abrasive disc is accomplished by removing a section in the guard rail and swinging the dresser arm across the face of the abrasive. Bulletin available.

No. 109—For further information see Page 19

Timing Device



Haydon Manufacturing Co., Inc., Torrington, Conn., has introduced a low-cost timing device, with audible signal, for large volume applications. Known as the Series 8010, it comes in a wide range of timing intervals made possible because of the many motor speeds available. At the end of the preset interval, the signal, a buzzer, sounds continuously until manually turned off. The timer is a compact unit, measuring 4-1/32" by 2-11/32" by 1-25/32". It can be mounted and operated in any position; rotates clockwise or counter-clockwise and is settable in either direction, to start or when in operation. It lends itself to economical volume production, Haydon says, and is not available in small quantities.

No. 110—For further information see Page 19

Fire-Fighting Foam

Rockwood Sprinkler Co., 38 Harlow St., Worcester 5, Mass., has announced a new type of its FOAM liquid—"Double Strength" fast flow fluid foam. It extinguishes fires in gasoline and other similar flammable liquids faster and more economically than Rockwood's old type liquid or chemical products. It is said to be more fluid, faster spreading, and to flow at sub-zero temperatures. Where proper proportioning is provided, it can be used with the latest types of Fog-FOAM and FOAM nozzles in hose lines or fixed piping systems. It is said to be easier for firemen and shippers to handle, and to require only half the space for storage and shipping previously required for similar products.

No. 111—For further information see Page 19

(Please turn to page 132)



New Savings

**WITH LUNKENHEIMER BRONZE VALVES
BALANCE YOUR RISING MAINTENANCE COSTS**

YOU'RE familiar with Lunkhenheimer bronze valves, but have you considered them in connection with your plant costs?

Take a look through your own plant. Chances are, you'll find Lunkhenheimer bronze valves — still on the job after a decade . . . a quarter century or more of service. You've been keeping your maintenance costs down on those installations, without giving them much thought. With bronze valves, as

with everything else, it's the upkeep that really counts. Why not *create new savings* by "going Lunkhenheimer" all the way?

Slip this page in your follow-up file, and write for the latest information on Lunkhenheimer bronze valves. It's available from the leading industrial distributor in your area, or from The Lunkhenheimer Co., P. O. Box No. 360M, Annex Delivery Station, Cincinnati 14, Ohio.

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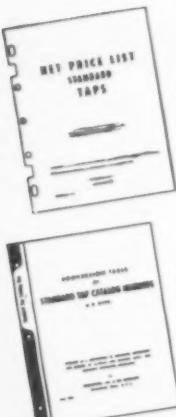
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Net Price List of Standard Taps, published by Threadwell last year as a free boon to bookkeepers.

And Now . . .

Threadwell simplifies and speeds up your ordering with its Conversion Table of Standard Tap Catalog Numbers. All standard types and styles of American Manufacturers cross referenced by catalog number. Yours for the asking. Mail coupon below.



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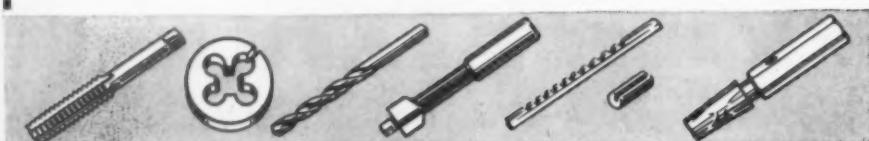
Please send me without obligation your new Conversion Table of Standard Tap Catalog Numbers.

Name _____ Pos. _____

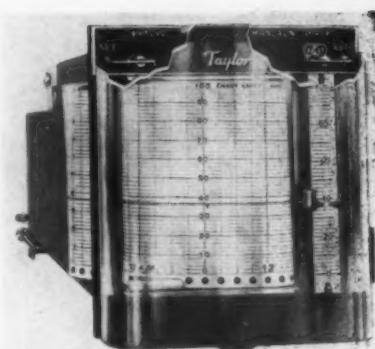
Company _____

Street _____

City. _____ Zone. _____ State. _____



Recorder



The Transet Recorder, a new miniature recording-receiving instrument for pneumatic transmission of flow, liquid level, pressure and temperature, has been introduced by Taylor Instrument Companies, 95 Ames St., Rochester 1, N. Y. The recorder is a compact unit that provides needed processing data right on the panel itself, meeting the problems created by large and confusing control rooms. It is suited for either graphic or conventional panels. It fits into a panel opening $3\frac{7}{8}$ " x $4\frac{1}{2}$ ", with a flange measurement of $4\frac{3}{8}$ " x 5". The recorder records the transmitter output in terms of the process variable measured.

No. 112—For further information see Page 19

Motors



Wagner Electric Corporation, 6400 Plymouth Ave., St. Louis 14, Mo., has developed a full line of cast iron frame totally enclosed fan-cooled motors available in ratings from 5 hp through 250 hp in both standard and explosion-proof designs. The motors are said to be especially suitable in industrial applications where corrosion is a problem, either because of the nature of the materials processed or because the motors must be installed outdoors. Among the construction details featured are: cast iron end plates; cast iron blower shield; corrosion resistant blower; cast iron conduit box constructed to allow maximum room for easy connection of motor to line; sealed leads; cartridge type ball bearings; completely protected laminations.

No. 113—For further information see Page 19
(Please turn to page 134)

A complete line—
DISSTON BITE-RITE FILES
from a single good source—
YOUR LOCAL DISSTON
INDUSTRIAL DISTRIBUTOR



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...TOOL-MAKER'S TOOL MAKER

Thousands of dozens of files are used annually right in Disston plants, in the regular production of other fine Disston Tools. You could have no stronger proof that Disston Bite-Rite® Files are able to do the toughest kind of high-precision work, within rigid cost limits. *That's what Disston makes them for!*

Others in all lines of industry are likewise guarding quality, speeding schedules, and economizing, by using Disston Bite-Rite Files. *Disston Skill* makes each shape and cut precisely uniform. And *Disston Service* is ready to help you get every last penny's worth of good work out of Disston Files . . . and out of any other Disston Tools you buy.



For there is a qualified Disstioneer available to analyze operations for you, and consult with you on applying all Disston Tools most efficiently on any of your work. *Call for a Disstioneer to help you lick the jobs that lick the average tools!*



DISSTON METAL-CUTTING BAND SAWS
You can get the correct types from the Disston line—Hardened Throughout and Hard Edge Flexible Back (in Regular and Buttress Teeth patterns).



DISSTON HACK SAW BLADES
For a wide variety of machine and hand metal cutting operations.
IN THESE TYPES: High Speed Di-Met Chromel® Duraflex® *Reg. U.S. Pat. Off.

HENRY DISSTON & SONS, INC.

933 Tacony, Philadelphia 35, Pa., U. S. A.
In Canada, write: 2-20 Fraser Ave., Toronto 3, Ont.





**STANDS FOR *Sterling*
AND *Satisfaction!***

The "S" stamped on the back of every Sterling Wheelbarrow symbolizes Sterling quality and satisfaction in barrow transportation. It is our way of letting you know that Sterlings are built from the finest materials by skilled craftsmen.

STERLING WHEELBARROW CO., MILWAUKEE 14, WIS.



Welded tray, all-steel construction with reinforced tubular steel frame, channel steel legs and roller bearing wheel with pneumatic tire. Assures smooth wheeling and perfect balance.

Sterling WHEELBARROWS

... You can't cut
floor waxing costs
by buying cheaper wax

Cheaper wax requires more frequent re-waxing. And the labor thus involved accounts for 90% of floor maintenance costs. The way to cut those costs is to buy the finest floor wax—**SUPER-SWIFTSHEEN**. Actual performance records prove that with Super-Swiftsheen you can reduce re-waxing frequency by from 1/2 to 2/3 and make a major saving in labor costs.

SUPER-SWIFTSHEEN is a premium floor wax, yet costs no more than regular first quality waxes.



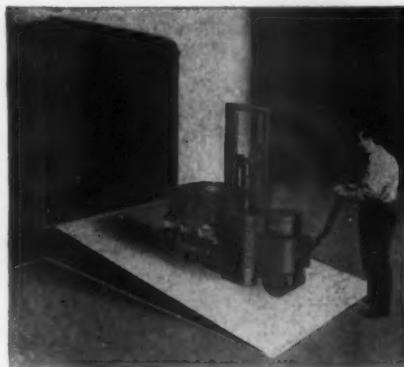
The GERSON-STEWART Corp.
LISBON ROAD • CLEVELAND, OHIO

Write for the Whole Story

This new folder tells how you can achieve big savings in floor maintenance. Write for a free copy today.



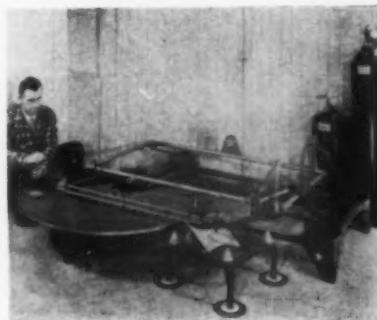
Loading Platform



Revolver Co., North Bergen, N. J., has a new device, called the "Make-It-Evener", that levels a loading platform or dock with the height of an automobile truck. Built into the loading platform like a hydraulic elevator, it is usually about 18' long by 6' wide. The inside end of the platform is held in position by a pivot, while the outer end is raised or lowered by hydraulic ram. The capacity can be made to suit requirements up to 20,000 lbs. In another application, the pivoting platform can be installed flush with the ground so that the rear wheels of highway trailers and trucks may be raised or lowered.

No. 114—For further information see Page 19

Torch Holder



For smaller jobs that do not justify elaborate electrically operated flame cutters, the Krohn Manufacturing & Supply Co., Centreville, Mich., is offering its "Krohn Star" pantograph torch holder for contour flame cutting and butt-welding. Light materials can be butt-welded by substituting a welding torch for the cutting torch. Krohn says the machine assures accurately cut patterns, devoid of ragged edges, through utilization of the pantograph principle. It is said to lessen eye strain, since the operator is several feet from the flame and does not have to watch it steadily. The

(Please turn to page 138)



TRI/CLAD MOTORS

REG. U.S. PAT. OFF.

will run safely without relubrica-
tion for as long as any general-
purpose motor you can buy—

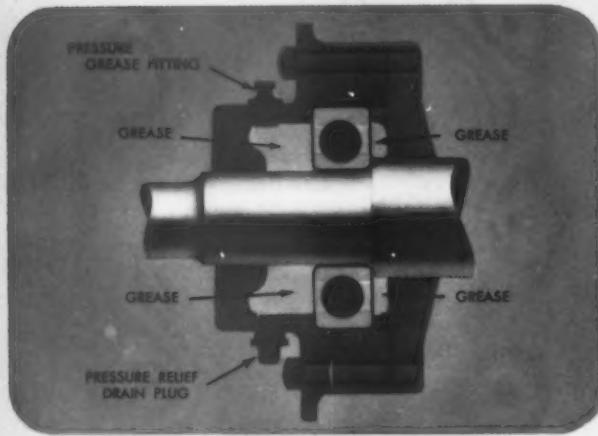
and if the application makes re-
lubrication a must, you can grease
a **TRI/CLAD** without halting
production

GENERAL  **ELECTRIC**

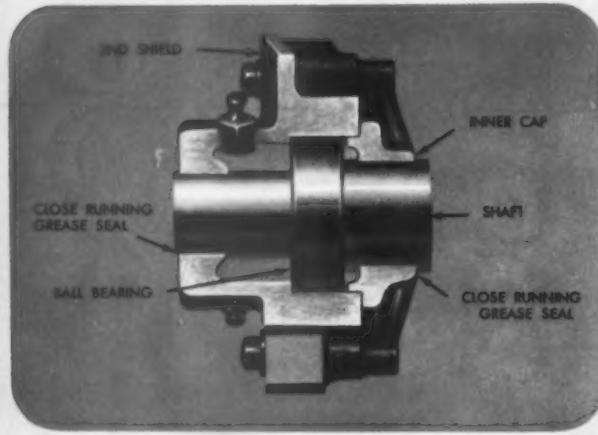
HER
WI



- 1 EXTRA BEARING PROTECTION** — Tri-Clad gives you extra bearing protection because heaviest standard-service bearings are carefully selected to withstand severe loads for long periods.



- 2 EXTRA GREASE** — Four times the ordinary amount of grease is packed into the large Tri-Clad grease reservoir. Since bearing life depends on grease, this means that Tri-Clad motors will run safely for years — for as long as any general-purpose motor you can buy.



- 3 SEALED-IN BEARINGS** — Bearings and grease are completely sealed in a cast housing with long running seals for extra protection from dirt, dust, and lubricant leakage.

TRI CLAD MOTORS will run safely without relubrication for as long as any general-purpose motor you can buy —

Tri-Clad extra lubrication "protection" can save you money because:

1. Tri-Clad's oversize grease reservoir and the heaviest standard-service bearings mean you do not have to bother with greasing between motor check-ups.
2. When relubrication is needed on those tough applications, you can grease a Tri-Clad without interrupting production-line operations.

Tri-Clads are grease-gun easy to lubricate *on the job*. Moreover, a Tri-Clad motor will run safely where an ordinary motor would fail. Chances are you'll be spared the cost of a "special" motor.

YOU BE THE JUDGE! The best way to prove to yourself that Tri-Clad gives you the most for your motor dollar is to contact your local G-E office. Tri-Clad stocks are complete. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*



- 4 PRESSURE-RELIEF GREASING** — An efficient system of pressure-relief lubrication (with standard fittings) enables a Tri-Clad motor to be quickly and easily greased on the job when and if it's needed.

GENERAL ELECTRIC



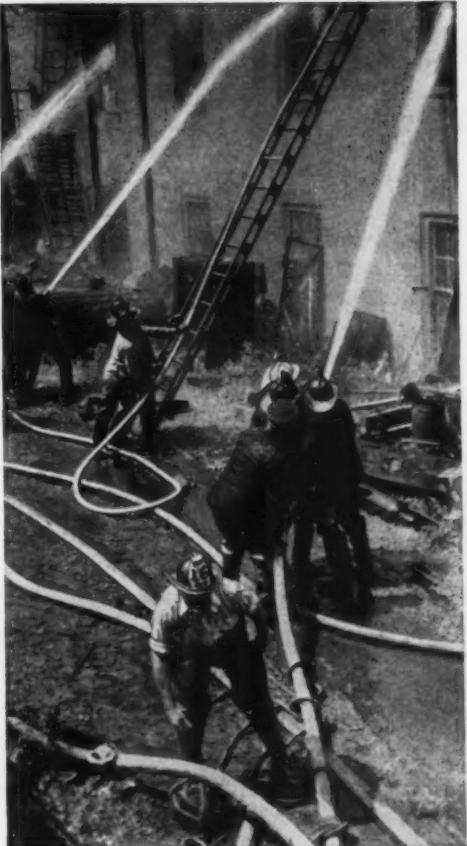
FAIR AND COOLER...INSIDE. Air-conditioning is one of many contributions to travel comfort supplied by America's railroads. Power for air-conditioning and car lighting in thousands of passenger cars is provided by Exide Batteries.



WORLD'S LARGEST CIRCUIT BREAKER is at a desert station between Boulder Dam and Los Angeles. Boulder Dam and other great power stations and substations throughout the country use Exide Batteries to operate switchgear, circuit breakers and to perform other essential tasks.



LONGEST UNDERSEA TRIP ENDS. U.S.N. guppy-snorkel submarine *Pickerel* completes 21-day, 5200-mile submerged cruise from Hong Kong to Pearl Harbor. On this and many other U.S. Navy vessels, Exide Batteries serve many vital needs. (Official Dept. of Defense Photograph)



FIRE CONFINED to rag and waste paper warehouse by prompt arrival of firemen. Getting men and equipment to a fire quickly means lives and property saved. Quick starting is vital. That's why Exide Batteries are used in so much of the nation's fire-fighting equipment and in so many alarm systems.

Every day you benefit...

from the use of Exide Batteries, for there are Exide Batteries for every storage battery need. In railway service they are used for signal systems, Diesel locomotive cranking and other important tasks. In industry they supply motive power for thousands of battery-electric materials-handling trucks, mine locomotives and shuttle cars.

Uncounted numbers of Exides are used by telephone, telegraph, radio and television companies...in aircraft of every type...in ocean, harbor and river vessels. And on millions of cars, trucks, tractors, buses, they prove daily that "When it's an Exide, you start."

Information regarding the application of storage batteries for any business or industrial need is available upon request.

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

Exide* BATTERIES HAVE PROVED THEIR
DEPENDABILITY IN VITAL SERVICES FOR 62 YEARS

*Reg. Trade-mark U.S. Pat. Off.



How to keep Line "FEATHERS" out of your hair!

It was a clean, sharp line till it had to be erased. But when it was re-inked, brother how it feathered and "blobbed"!

Feathering lines are one of the things you don't have to worry about with Arkwright Tracing Cloth. Even erased surfaces will take a neat, sharp line. What's more, you'll never find pinholes, thick threads or other imperfections in Arkwright cloth. You'll never have to fear that your drawings will discolor, go brittle or become opaque with age. A drawing on Arkwright Tracing Cloth will yield clean, clear blue-prints years after you make it.

Aren't your drawings worth this extra protection? Arkwright Finishing Co., Providence, R.I.

ARKWRIGHT

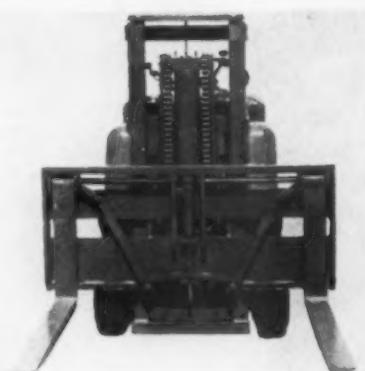
Tracing Cloths

AMERICA'S STANDARD FOR OVER 25 YEARS

Want Additional Product Information? See Page 19.

(Continued from page 134)
machine cuts circles or rings up to 24" in diameter; a straight cut 52" long; squares; and combinations of curves and angles. Two models, differing only in height from the floor, are available.
No. 115—For further information see Page 19

Adjustable Forks



Hydraulically adjustable forks which enable the operator of a lift truck to quickly and accurately vary the distances between the two forks at any time by means of a conveniently located control lever have been introduced by Towmotor Corporation, 1226 E. 152nd St., Cleveland 10, O. The forks are primarily designed for fork lift trucks that operate on close time schedules and are required to handle pallets or materials of different widths. The operator can regulate distance between forks without leaving his seat, and while the truck is in motion. Model LT-48 Towmotor fork lift truck with the new forks is illustrated.

No. 116—For further information see Page 19

Fine Pitch Hobs

To meet the increasing need for efficient, high production precision tooling for the manufacture of small gears to be used in clocks, instruments, etc., Illinois Tool Works, 2501 N. Keeler Ave., Chicago 39, Ill., has made available a complete assortment of fine pitch hobs. The hobs are used to cut 20 D.P. gears and finer. Extreme precision requirements in this field of tool manufacture and application are illustrated by the standard tolerance for fine pitch hob lead variation in one turn—.0003" maximum. In the gears produced, a profile error of only .0002" can represent as much as 3% of total tooth thickness. Special booklet available.

No. 117—For further information see Page 19
(Please turn to page 140)

*immediately available
from stock*

**...a full range of
standard types
...AIRCO stainless
steel electrodes**



All Airco Stainless Steel Electrodes are designed to afford extreme operational ease in all positions — vertical, overhead and horizontal. Their arc stability and deposition characteristics assure smooth, flat weld deposits. Furthermore, Airco's continuing research permits you to get special stainless steel electrodes tailored to fit any unusual requirements that might arise.

These electrodes are supplied with two types of flux coatings — the heavy extruded lime type, specifically designed for application with DC reversed polarity, and the extruded titania type for AC or DC application.

These electrodes produce a spray type arc of excellent stability. The covering which serves as a flux gives rapid wetting action and com-

pletely covers the deposit. Because of this good wetting action, it is possible to produce welds which taper into the base metal, thus eliminating abrupt changes of contour which would be conducive to slag adherence.

For more information about Airco Stainless Steel Electrodes, write your name and address on the margin below, and send it to your nearest Airco office, or authorized dealer for a copy of Catalog ADC-650B.

*More news about
AIRCO products*

**IMPROVED AIRCO NO. 78E
MILD STEEL ELECTRODE**



No. 78E is an improved high quality E6010-electrode. It has a very smooth spray type arc with little spatter. The deposit solidifies quickly producing very smooth horizontal fillets. It also operates exceedingly well on vertical up, vertical down and overhead welding. The mechanical properties and X-ray characteristics are excellent exceeding the requirements of the E6010 class.

This electrode is used extensively in the welding of fittings on fired or unfired pressure vessels, storage tanks, structural frames, bridges, pipe lines, and all classes of marine work where high ductility and tensile strength are essential.

AIRCO HELIWELDING EQUIPMENT



All high capacity Heliweld holders are water-cooled to provide sufficient cooling for high currents used. There's the Air-Cooled Manual

Holder for light, general-purpose work . . . the Water-Cooled Manual Holder for heavier, general-purpose work . . . the Machine Holder for semi-automatic installations . . . the Automatic Head for the fully automatic operations. Also available is a Heliweld "Bumblebee" for AC heliwelding. This machine has all controls for current, gas and water within its housing, PLUS a one unit power supply.

For more information, write your nearest Airco office today for a free copy of Heliwelding Catalog No. 9.

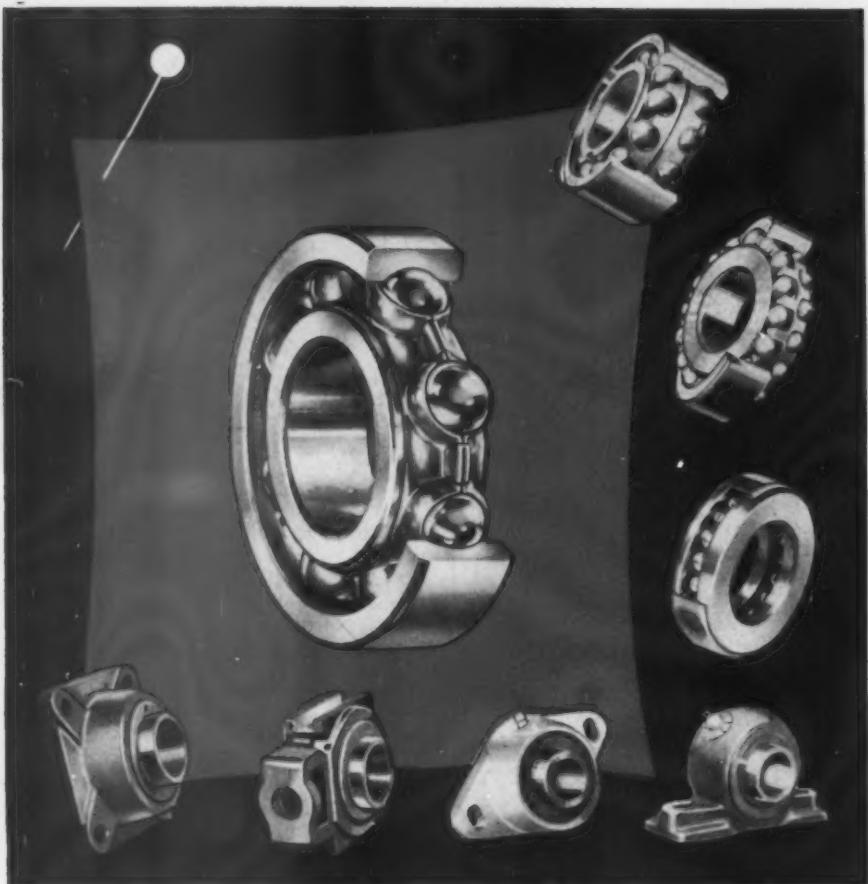
★ ★ ★

Air Reduction supplies Oxygen, Acetylene and other industrial gases . . . Calcium Carbide . . . and a complete line of gas cutting machines, gas welding apparatus and supplies, plus arc welders, electrodes and accessories. Ask us about anything pertaining to gas welding and cutting, and arc welding . . . we'll be glad to help you.



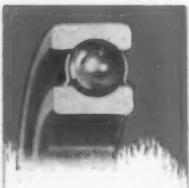
AIR REDUCTION

Offices in Principal Cities



REMEMBER THIS AND SAVE:

Only Smooth Power IS ECONOMICAL POWER!



NO FINER FEATURES

Ultra-precise tolerances...
races of chrome alloy electric furnace steel with uniformly fine-grained homogeneous structure... rugged, exactingly balanced, deep grooved ball paths "generated" for true race curvature and polished to super smoothness... micro-lapped chrome steel balls matched in sets and sphericity to within .000025".

It pays, and pays well, to remember that only from machines that transmit their power smoothly do you get truly efficient, truly economical power. And smooth power can only come from the proper and adequate application of good bearings... for example, AHLBERG bearings.

Try, test and compare Ahlberg bearings. We believe you'll decide your dollars can't buy better performance than these fine bearings give. Whether your requirements are for production or maintenance you will find Ahlberg an understanding, complete and capable bearing source. We have served industry—every branch of it—since 1908. We are confident that from this accumulated wealth of experience can be drawn worthwhile savings for you—in reduced operating and maintenance costs of the machines you make or use. Write, wire or 'phone today!

AHLBERG BEARING COMPANY

Precision Craftsmen Since 1908
3025 West 47th Street, Chicago 32, Illinois

DISTRIBUTORS IN ALL PRINCIPAL INDUSTRIAL AREAS

AHLBERG

BALL BEARINGS • ROLLER BEARINGS • THRUST BEARINGS • BALL BEARING HOUSINGS

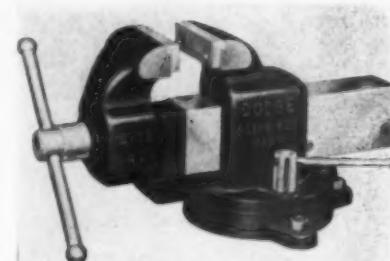
Containers



Tapered low-cost plywood boxes that can be nested when not in use are the latest product of G. B. Lewis Company, Watertown, Wis. The box is made up of $\frac{1}{2}$ " three-ply plywood panels secured at corners with 22-gage galvanized steel angles riveted through the wood. All top corner joints are reinforced with heavy gage steel. Bottom frame cleats are fastened on the inside to provide solid base on which runners of inside nested box can rest. The boxes are not made in standard stock sizes. Customers may specify maximum inside size limits of $27\frac{3}{8}$ " long, $17\frac{1}{8}$ " wide and $17\frac{3}{8}$ " deep; minimum inside limits of $17\frac{3}{8}$ " long, $11\frac{1}{8}$ " wide and $7\frac{3}{8}$ " deep.

No. 118—For further information see Page 19

Machinist's Vise



Dodge Manufacturing Company, Mishawaka, Ind., is marketing a quick-action machinist's vise, built on a new principle and embodying a patented fast slide action. Known as the Slide-Set Vise, it opens or closes to any position in one second through a push-pull action which eliminates spinning the handle. The slide action is simple, fast, positive. A turn and a half of the handle counter-clockwise and the jaw slides in "neutral" to any position. From the moment the work is engaged the vise operates in the conventional manner. The vise is provided with either a swivel or stationary base and is built only in the 4" size. No-pinch handle protects the operator against blood blisters between thumb and forefinger.

No. 119—For further information see Page 19

(Please turn to page 144)



TRIMMING THAT BOOSTS PROFITS!

"Cost of Goods Sold" is more than just another accounting phrase. It's the basic measuring stick used to determine the amount of your profits. Give it a good trimming and you increase your profits. Since 1/3 of every dollar spent on production goes into non-productive lifting, weighing, moving and warehousing, here is where you can cut costs the most.

That's where Yale Material Handling Machinery comes in! Yale Industrial Trucks, Hoists and Scales effect big economies in material handling—make your production dollars go further. Save time, effort and money. Let Yale "pay-off" tools widen the gap between profit and loss. The nearby Yale representative will gladly show you how Yale equipment can bring big savings to your plant. Start the ball rolling toward lower costs and increased profits. Get in touch with him today.

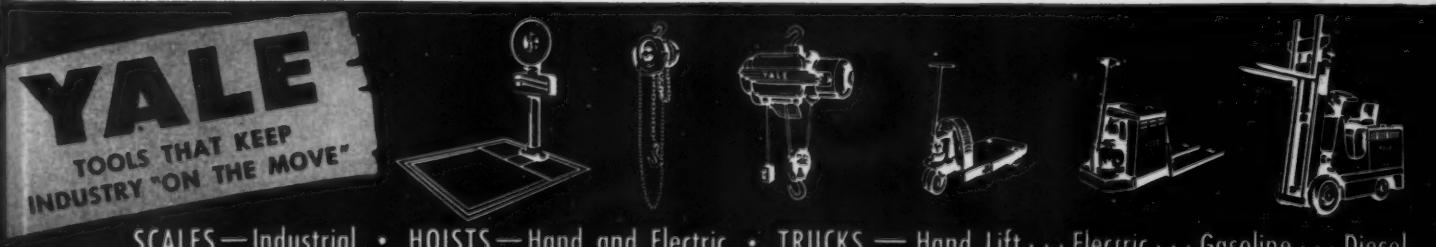
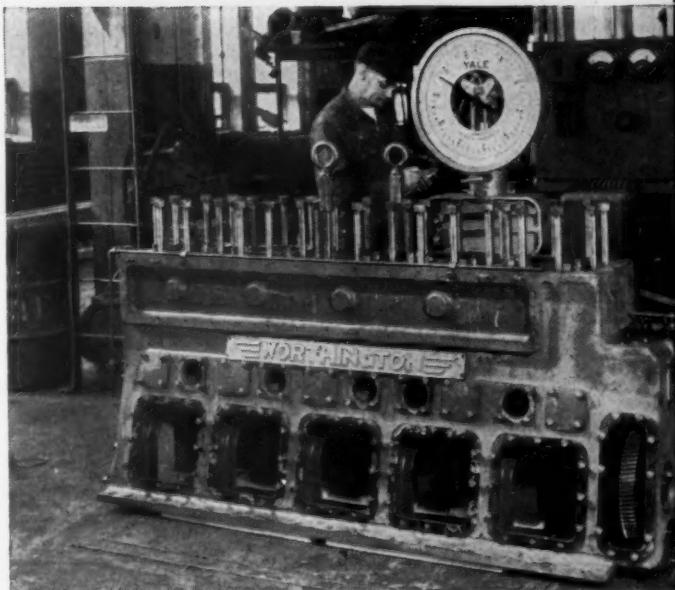
THE YALE & TOWNE MANUFACTURING CO.

Department L-182

Roosevelt Boulevard

Philadelphia 15, Pa.

L-31



SCALES—Industrial • HOISTS—Hand and Electric • TRUCKS—Hand Lift • Electric • Gasoline • Diesel



Land of the free!

... where enduring copper is a symbol of our better way of life . . . where copper and its alloys provide a myriad of useful, low-cost, mass-produced conveniences. Take this Jarco Key-Chain Flashlight: Solid brass deep-drawn shell and cap; solid brass screw-machined, threaded and knurled nut; solid brass bead chain; battery, tension spring and focused bulb. Made by Jarco Metal Products Corporation, New York. Sold by the millions at 39¢ retail.



Twenty years—

That's not a sentence. It's a guarantee that goes with every automatic water heater sold by Bauer and Company of Hartford, Conn. One big reason why is that Everdur*, carbon-arc welded, is used for the non-rust tank. Coincidentally, twenty years ago the Bauer Company discovered the merits of this Copper-Silicon Alloy—strength, corrosion resistance, workability and weldability—and has been using it ever since for tanks ranging from 2½ to 150 gallons. Dependable stuff, that Everdur.

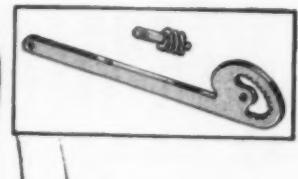
*REG. U.S. PAT. OFF.



P.S.

If you are having difficulty in selecting a metal for a particular application, let us help you with it. Talking about it entails no obligation—and our vast experience places us in a position to come up with the right answer. Address The American Brass Company, Waterbury 20, Conn.

Anaconda

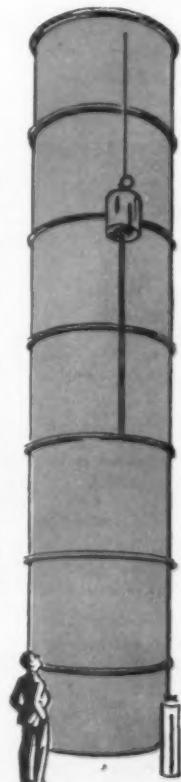


It works—weather or not

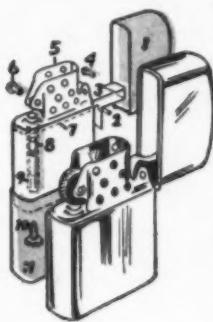
When the H. S. Getty Company, Inc., Philadelphia, designed its "Internal Gear Construction Window Operator," many difficulties presented themselves. First, it had to be non-rusting, corrosion resistant and yet moderate in cost. Regular brass alloys answered that. But some parts, such as the operating arm and machine-cut worm, needed extra strength and stamina to resist the stresses caused by rain-swollen or iced-up sash. Everdur, The American Brass Company's Copper-Silicon Alloys answered that . . . proving what we've been saying right along—that there's an Anaconda Copper Alloy available to do 'most any kind of job. And economically, too!

Schenley sets up a tall one

Ever wonder why copper has been used so long—and so diversely—in breweries and distilleries? The question is prompted by this three-story still, one of the many pieces of equipment made of copper in the new Canadian Schenley Limited distillery at Valleyfield, Quebec. The answer: Copper is readily worked into the unusual shapes and forms required; it provides high corrosion resistance, and never rusts to contaminate products; it's tops in rapid heat transfer; it can be readily and dependably joined by soldering, brazing, oxyacetylene welding, or by the newer carbon arc, inert-gas-shielded welding method. Most of the equipment for the Schenley plant was fabricated in Canada by Canadian-Vickers Limited of Montreal—of Anaconda Copper, of course.



Metals at work



"No Zippo owner ever spent a cent for repairs"

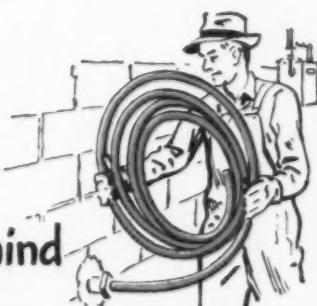
That is the unqualified, unconditional guarantee held by millions of Zippo Lighter owners. How does Zippo do it? First, the design is excellent. Second, meticulous care is employed in manufacturing. And third, the right metals are used in the right places . . . metals that are easy to fabricate, economical to finish and that do their assigned jobs for years on end. You guessed it. Eleven components of the Zippo Lighter are made of Anaconda Brass and Nickel Silver Alloys in the form of strip, wire, rods and tubes.

Stuffed with Copper

Ever since The American Brass Company developed a means of producing electrolytically deposited copper in practically unlimited lengths, new uses for this paper-thin metal pop up continuously. Most recent is the application of "Electro-Sheet" in Multi-Velocity Air Filters, made by Research Products Corp., Madison, Wis. The copper, slit and expanded, has important advantages over other materials: Light weight, high dirt-holding capacity, non-clogging and improved cleanability features; and lower restriction at all air velocities up to 550 feet per minute. Just in case you want to know, "Electro-Sheet" is available in thicknesses from .00068" to .0094", in widths up to 62".



Out of sight but not out of mind



Maybe you never gave a thought to those gas service lines that run from the main into the house. But you can bet your gas company does, for replacing rusted out steel services is a major item of maintenance expense. So . . . twelve years ago a large midwest utility started replacing gas service lines with copper tube—very often eliminating trenching by pulling the smaller 1" or 1 1/4" tube through the reamed-out steel pipeline. 25,000 replacements have been made by this one company alone, and—surprise—the total cost of a rust-free copper renewal is considerably less than that of a steel replacement!



We take our own medicine

And it's good! For years we've been extolling the merits of welding with Bronze. Then our subsidiary, the American Metal Hose Branch ran into a toughie—braze-welding the fittings on these 2 1/2" diameter Vibration Eliminators for refrigeration lines. The assembly includes a thin-wall flexible bronze tube, a rigid copper tube fitting, a copper ferrule, and—672 strands of .028" bronze wire. Result: a strong, ductile, vibration-resistant weld, absolutely leakproof against the most searching refrigerants. Want a booklet on Anaconda Bronze Welding Rods? Ask for Publication B-13.



Look this way, please

Designed to sell at \$14.95, the Beacon "225" Camera, produced by Whitehouse Products, Inc. of Brooklyn, N. Y., introduces a degree of precision befitting much more costly cameras. Handsomely styled, the Beacon "225" uses standard film and is inexpensive to operate. This policy of offering high-quality at low-cost has met with marked success, for more than 300,000 Beacon Cameras have been sold to date. Dozens of the intricately formed camera parts, made of copper base alloys, were produced by our Waterbury Brass Goods Branch—in large quantities, inexpensively, to unusually close tolerances in multiple die production. If you're interested in this type of work your sample, sketch or description will start the ball rolling.

5099

ANACONDA

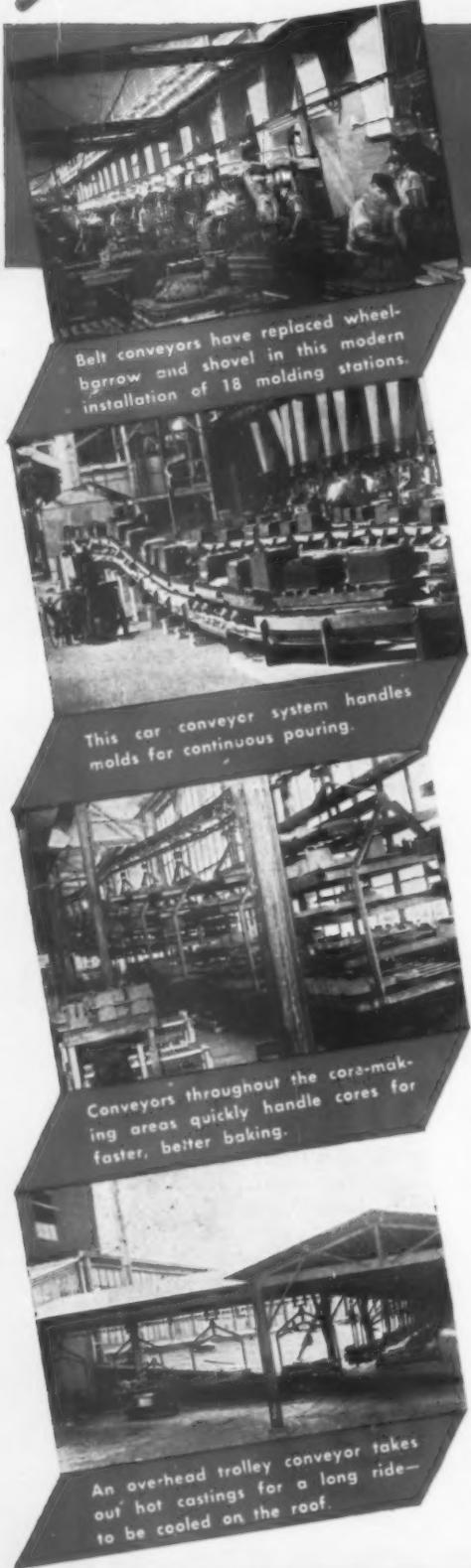
the name to remember in

COPPER, BRASS & BRONZE

Make it Better

with

GRAY IRON



**SAE or ASTM
Plain or Alloyed
from
*Forest City
Foundries***

- Forest City planned production begins with an analysis of your casting needs and production requirements. Whether you furnish patterns, or drawings and specifications, we are prepared to get your job into production quickly.

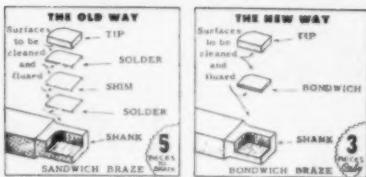
With two large foundries mechanized with modern equipment, production moves fast — delivery schedules are met — quality is maintained.

Your castings department can be within the reach of your telephone when you make Forest City Foundries your casting headquarters.

The FOREST CITY FOUNDRIES Company

3800 WEST 27TH STREET • CLEVELAND 13, OHIO
TELEPHONE TOWER 1-5040

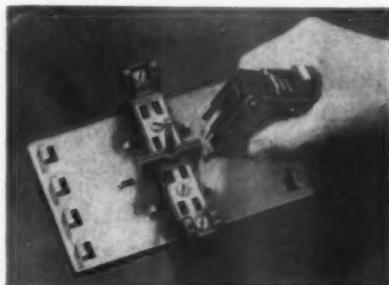
Brazing Material



The Bondwich method for sandwich brazing of carbide tool tips, developed by General Plate, Divn. of Metals & Controls Corp., Attleboro, Mass., involves bonding three layers of the sandwich into a single sheet for easier handling. Previously, the sandwich braze method, although recognized as giving the best results in brazing carbide tool tips, had the disadvantage of the work necessary in cleaning, fluxing, and positioning the three separate pieces of brazing alloy and shim material in addition to the tip and shank. The combinations of shim and brazing materials and ratios of thicknesses which can be made are unlimited, according to General Plate. Additional details available on request.

No. 120—For further information see Page 19

Air Circuit Breaker



A new air circuit breaker which can be inserted in an enclosing case faster and more easily than a fuse and is priced competitively with fusible devices, has been announced by Federal Electric Products Company, 50 Paris St., Newark 5, N. J. Called the Stab-Lok, it is of unit-pole construction and has thermal-magnetic overload. The breaker consists of only two assembled parts, two springs and a handle, assembled in a case. Federal says it was particularly designed for mass production methods. With only nine enclosures, the Stab-Lok line can be substituted for hundreds of fusible and circuit breaker devices which Federal now manufactures. A two-pole, simultaneous trip breaker is included in the line, the first time in a low cost small air circuit breaker.

No. 121—For further information see Page 19

(Please turn to page 146)

You Should Know These FACTS ABOUT PLASTICS!

PLASTICS ARE LOW-COST BASIC INDUSTRIAL MATERIALS

Most published data on plastics are written around their multitudinous uses, as industrial components and as consumer goods. Such information is of value insofar as it reveals the growing popularity and increasing acceptance of plastics.

Yet, there remains the need to clarify for management and operating executives of American business the basic reasons why plastics—in the past 10 years—have grown six-fold from a 200,000,000 to a 1,200,000,000 pound annual business.

The adjoining chart provides part of the answer. It shows the costs per cubic inch of a variety of materials including plastics and metals. Its purpose is to place plastics properly in the industrial scheme. It is not intended to draw misleading comparisons between these materials, all of which are serving industry so well and which will grow in usefulness as the national economy expands.

BAKELITE DIVISION, LEADING PRODUCER OF PLASTICS

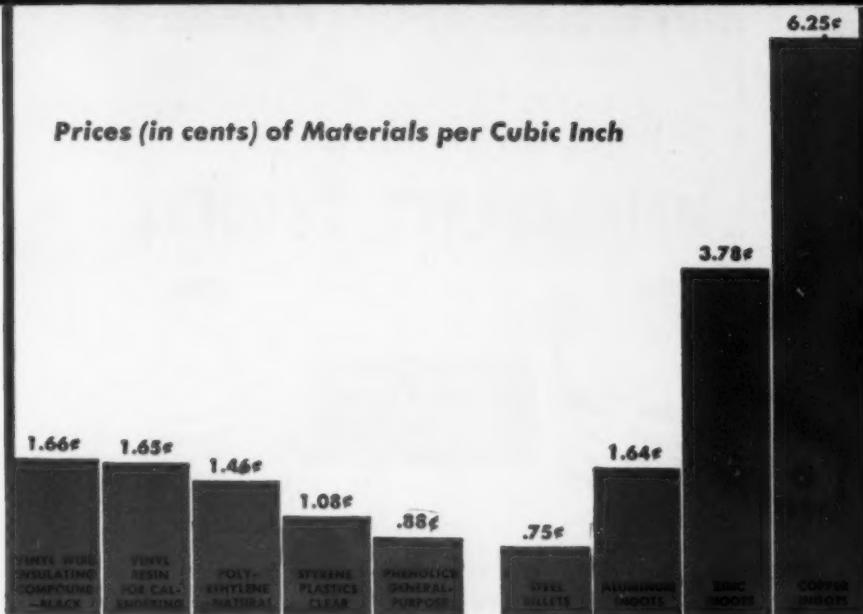
Bakelite Division of Union Carbide and Carbon Corporation ranks as the largest producer of plastics in the world, excluding the synthetics that are not commonly regarded as plastics. While Bakelite Division does not sell all types of plastics, it does sell those that are in greatest demand such as Phenolics, Polyethylenes, Styrenes, and Vinyls.

These plastics take such forms as film and sheeting, rigid sheets, resins for coatings and adhesives, molding, calendering, and extrusion compounds, and resins developed for such industrial operations as bonding, laminating, gluing, and impregnating.

NEW USES SPUR DEMAND

There are other reasons for the phenomenal growth in the demand for plastics. Many improvements have been made in the quality and efficiency of plastics and their processing. New types and forms of plastics have resulted from the huge investment in research and development. Above all, industry has become more familiar with plastics and has learned to take the fullest advantage of their many valuable properties. Examples are given in the next column.

Prices (in cents) of Materials per Cubic Inch



Specific gravity \times .03605 \times price per pound in cents = cents per cubic inch.

Prices in effect August 1, 1950, apply only to primary or basic materials;

Sources: "Engineering and Mining Journal," and Bakelite Division's price lists.

BAKELITE Polyethylene for blown bottles that are shatterproof, make extremely good looking, light-weight packages that save shipping costs, eliminate breakage, are squeezable for easy application of the contents.

BAKELITE Polystyrene emulsions provide the bases for wholly new types of waterproof, washable, water-thinned paints for exterior and interior service.

BAKELITE Phenolic plastics, used with Heatronic preheating are now molded in extremely large sizes...for example, one-piece television cabinets weighing twenty pounds or more.

VINYLINE plastics for electrical insulation, in distinguishing colors, are used for insulated wire, light in weight and small in diameter. They increase efficiency of wiring systems, make possible non-metallic sheath building wire.

BAKELITE Polyethylene film has become a prime medium for packaging, especially for frozen foods and produce which must reach consumers garden fresh.

BAKELITE Styrenes for wall tiles combine such desirable features as: decorators' colors, beautiful finish, lightness in weight, ease of application to a variety of wall surfaces, and low cost.

VINYLINE plastic film and sheeting has transformed a whole nation's tastes with respect to shower curtains, draperies, window shades, rainwear, and inflatables.

BAKELITE Phenolic resins are employed as the bonding media for such applications as: glass-and-mineral wool thermal insulation, abrasive products, brake linings, and foundry sand molds and cores.

BAKELITE Styrene Plastics are widely used for housewares and toys because, at low cost, they provide a high degree of

serviceability, pleasing designs and gay, cheerful colors.

VINYLINE plastic flexible molding materials have provided a new concept of resilient parts for vacuum cleaners, luggage, and products such as hair curlers and dolls.

THE FUTURE FOR PLASTICS

The demand for plastics, particularly the types sold by the Bakelite Division, is continually increasing and there are times when demand may outstrip supply. New production facilities are now under construction to take care of rising and future demands. Manufacturers who are considering the use of plastics to improve their products are counseled to make their needs known now to the Bakelite Division so that they may benefit from its more than 40 years experience in the field of plastics. It is of utmost importance that the right plastics be used in the right places. By consulting Bakelite engineers, manufacturers can be assured that they will be using the correct materials for the job and that their products are designed to take maximum advantage of the properties and economic features of "Bakelite" and "Vinylite" plastics. Inquiries to Dept. AU-25 will receive prompt, thorough and confidential handling.

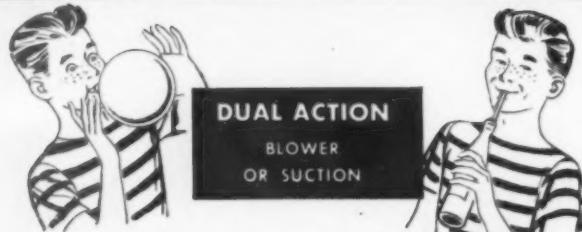
Bakelite
TRADE-MARK
PLASTICS



The terms "Bakelite" and "Vinylite" are registered trade-marks of

BAKELITE DIVISION, Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N.Y.

Why G.E. HEAVY-DUTY Cleaners are Feather Light on MAINTENANCE BUDGETS



No Commercial or Industrial Cleaner today rates as "modern" unless it provides *blower-suction* action plus WET and DRY Pickup.



General Electric offers all these features in high-vacuum models specifically engineered to **reduce cleaning costs**.

Further, G-E machines give you the POWER and the TOOLS to do the job quickly, thoroughly, economically, be it —

- removing coarse litter like tracked-in gravel, paper, etc.
- lifting deeply ingrained dirt from rugs and carpets
- cleaning soot and scale from furnaces
- taking up mop water
- dusting floors, walls, draperies and furniture
- removing suds when shampooing rugs and upholstery
- sucking up puddles in a jiffy when toilets or washbowls overflow.

This fact is being demonstrated in stores, schools, hotels, restaurants, hospitals, theatres, churches, office buildings, and factories throughout the land.

You too, will find it PAYS to replace obsolete equipment with MODERN Heavy-Duty G-E Cleaners.

YOUR FIRST STEP toward Lower Cleaning Costs is taken when you mail the coupon below for this new G-E Folder ➤



Heavy Duty Cleaning Equipment

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, Dept. 22-1221
1285 Boston Ave., Bridgeport 2, Conn.

Certainly, I am interested in Saving Cleaning Dollars—let me have your illustrated folder by return mail.

NAME.....

ORGANIZATION.....

ADDRESS.....

CITY..... ZONE..... STATE.....

Fifth Wheel Trailer



A new fifth wheel trailer featuring close coupling that automatically links the trailers just 18" apart has been developed by Market Forge Co., Everett, Mass. The trailer is said to be especially suited for handling heavy loads or for long hauls around docks, warehouses and terminals. Its all steel, heavy channel construction withstands severe abuse with minimum maintenance. A special locking device keeps the fifth wheel in line and prevents jack-knifing when a train of trailers is backed. Rubber wheels, called more maneuverable and rugged than the conventional caster type, permit this model to roll easily, even under capacity weight. Capacity of the trailer is 6,000 lbs. No. 122—For further information see page 19

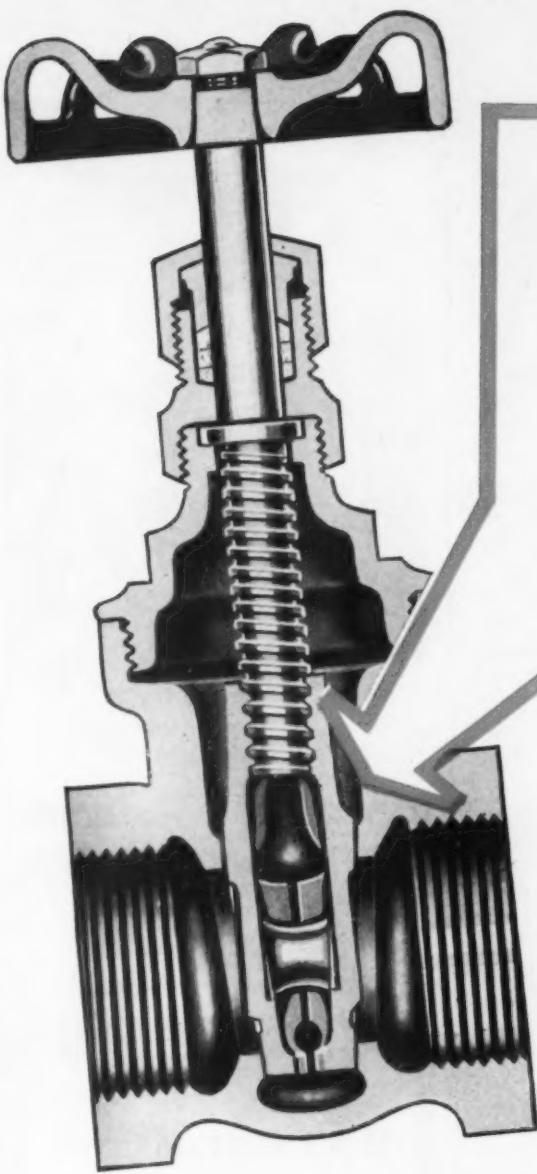
Fork Truck Attachment



A scoop shovel attachment for fork-lift trucks which operates hydraulically through the cycle of picking up a load, tilting back for carrying, dumping and return to scooping position, is announced by Industrial Truck Divn., Clark Equipment Co., Battle Creek, Mich. Clark says this new design gives faster operation, absorption of shocks detrimental to the uprights and to the entire truck mechanism, and eliminating of need for a costly cover. The shovel is suited to handling small stampings, scrap steel, small castings, sand, gravel, stoker coal, grain, ashes and other similar materials which will fall through a 2½" screen. It may be obtained in widths of 38" to 72"; capacities range from 8 cu. ft. to 15 cu. ft., for use on Clark trucks.

No. 123—For further information see page 19

(Please turn to page 148)



SQUEEZE PLAY—

Disc Action



**Makes O-B Gate Valves --
LEAKTIGHT . . .**

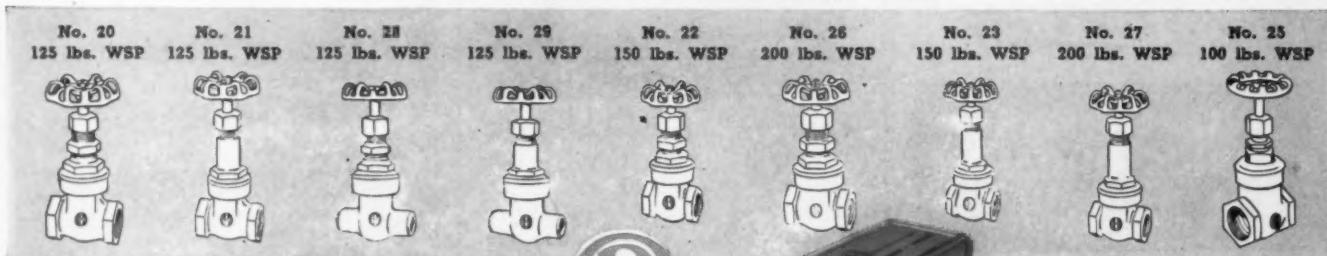
Not even gasoline or light oil can get by the O-B Flexitite Disc®. Due to its special split-wedge design, the outer edges of the Flexitite Disc have a slight springing action, which permits the disc to be squeezed slightly between the seat faces. This springing action (exaggerated above) enables the disc to adjust itself and conform perfectly to the matching surfaces of the seat. Minor irregularities are thus nullified and the perfect metal-to-metal seal yields 100 per cent leaktight closure on all types of general service.

COMPLETE LINE OF VALVES

In addition to gate valves, your local Ohio Brass Distributor carries a complete line of O-B globes, angles, checks, and special valves for low and standard pressure lines.

OHIO BRASS CO. MANSFIELD, OHIO

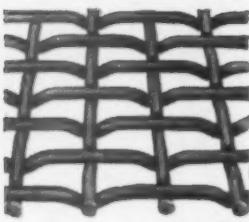
4019-V



Ohio Brass **VALVES**

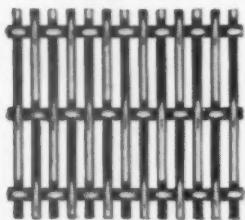
FOR DOMESTIC AND

INDUSTRIAL USE



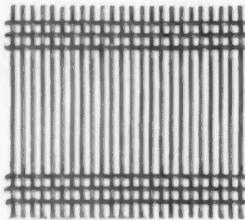
Specify Roebling Roeflat

for maximum wearing surface
and accurate sizing



Specify Roebling Roeton

for increased screening capacity



Specify Roebling Roeslot

for topmost screening capacity

WHATEVER your requirements, you'll meet them most efficiently and economically with the right Roebling Woven Wire Screen. Besides the inherent advantages of the constructions pictured above, each of the three is available in Abraso (high carbon steel), Roetemp (oil tempered steel) and in Stainless Steel to beat your own specific problems.

Mail coupon below for information that may help improve your screening operations.

FOR WOVEN WIRE SCREENS . . .

Today it's Roebling!

WOVEN WIRE FABRICS DIVISION

JOHN A. ROEBLING'S SONS COMPANY
ROEBLING, NEW JERSEY

Woven Wire Fabrics Division
John A. Roebling's Sons Co., Roebling, N. J.
Gentlemen: Please send my copy of Catalog
W-903, giving full information about Aggre-
gate Screens.

Name.....
Company.....
Address.....
City..... State.....

A CENTURY OF CONFIDENCE

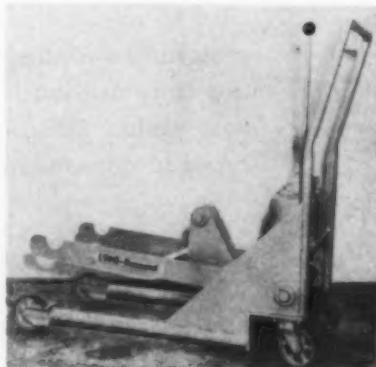


Respirator



The first twin cartridge respirator for protection against low concentrations of organic vapors and all dusts to receive the Bureau of Mines approval BM-2305 is American Optical Company's R5055, according to the company. People exposed to both types of atmospheric contaminants no longer need to change respirators, AO points out. In addition, other cartridges for use with the same basic respirator face piece protect against acid gases, combined acid and organic gases, ammonia and metal fumes. All cartridges are uniformly packed under electrical control and are supplied in balanced pairs. Users may now switch cartridges for different uses instead of having to purchase several types of respirators. American Optical is at Southbridge, Mass. No. 124—For further information see page 19

Hydraulic Truck



Cable reels, paper rolls and other materials on spools can be transported and positioned with a new hydraulic truck designed by LYON-Raymond Corp., 8674 Madison St., Greene, N. Y. One model of the truck which has been used with small cable reels has a capacity of 300 lbs. The opening between the base forks and elevating forks is 15" and the elevating forks lower to 14" and elevate to 28". A single speed hydraulic hand pump and hydraulic (Please turn to page 150)

For Savings



Specify

Darnell CASTERS

If you want maximum floor protection, economy and efficiency Demand Darnell Dependability...Made to give an extra long life of satisfactory service

Free Manual

DARNELL CORP. LTD.
LONG BEACH 4, CALIFORNIA

60 WALKER ST. NEW YORK 13, N.Y.
36 N. CLINTON, CHICAGO 6, ILL

EX-CELL-O Precision FOR SALE



LET
EX-CELL-O
PRODUCE YOUR
PRECISION PARTS
AND SUB-ASSEMBLIES



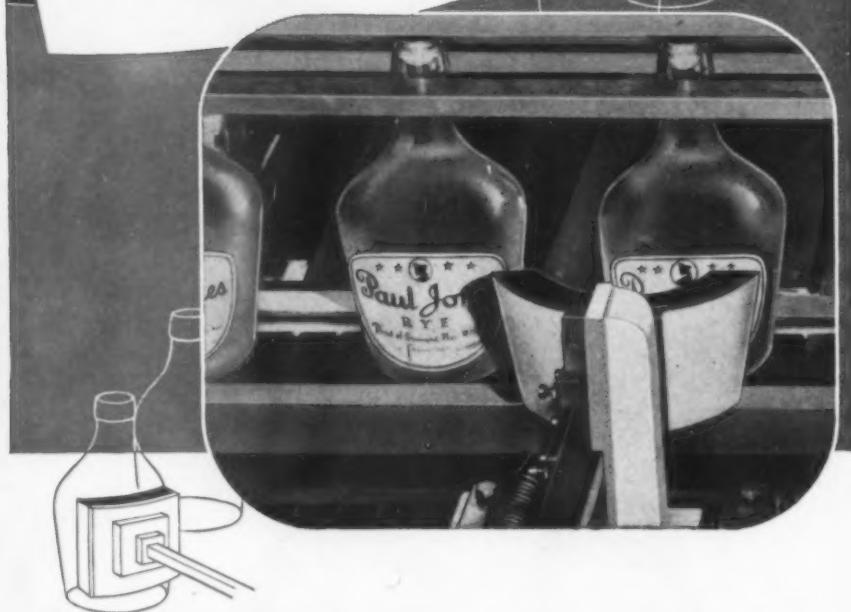
Having trouble holding close tolerances on production parts? Are precision sub-assemblies a bottleneck? Ex-Cell-O has the know-how that will lick these problems and keep parts or sub-assemblies flowing to your plant in just the quantities you need. Ex-Cell-O has very complete parts production facilities, and being one of the largest precision machine tool manufacturers, can work out the most practical processing with both standard and special production equipment. Call your local Ex-Cell-O representative, or send a part print to Ex-Cell-O in Detroit for a quotation.

EX-CELL-O CORPORATION

DETROIT 32
MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS
DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

**NEW CONTINENTAL RUBBER
DEVELOPMENT SOLVES COSTLY
PRODUCTION PROBLEM**



HERE'S AN UNUSUAL RUBBER PRODUCT in the labelling machine built by Pneumatic Scale Corporation. It's one-third softer than rubber compounds normally produced.

This exceptionally soft rubber is used in the pressure pads which apply labels to bottles as they move along a conveyor line.

Formerly, these pressure pads were made of "plied up" sheet and sponge rubber. This sponge rubber sandwich-type pad, while satisfactory, was costly and difficult to make. Pneumatic Scale engineers recognized the economies of solid rubber but had been unable to find a compound soft enough to do the job.

They consulted Continental and explained their problem. Continental ac-

cepted the challenge and finally came up with this new, extra-soft, solid rubber product, which—according to the customer—*meets every specification, saves considerable production time, and gives longer service.*

Analysis of your product may suggest a way to cut costs with a better-engineered rubber part. Take advantage now of Continental's complete service in rubber.

LET US SEND YOU THIS CATALOG

... that lists hundreds of standard grommets, bushings, rings and extruded shapes. It will be a valuable addition to your working file. Send for your copy today.



Rubber by **CONTINENTAL**
RUBBER WORKS
1903 LIBERTY STREET • ERIE, PENNSYLVANIA

Want Additional Product Information? See Page 19.

(Continued from page 148)
cylinder actuate the lifting mechanism, assuring easy, smooth operation. The truck is equipped with two 5" swivel casters and two 5" rigid casters.

No. 125—For further information see page 19

Globe Valve



A big advancement in valve design is said to be incorporated in a new 200-lb. bronze "W.S." globe valve offered by the Wm. Powell Co., 2503-31 Spring Grove Ave., Cincinnati 22, O. The outstanding features are the extra high lift of the disc; the exceptionally large flow areas above and below the seat. Advantages claimed are: full flow through the seat when the valve is fully open; turbulence practically eliminated, while pressure drop is cut to the minimum. Renewable, regrindable cone-shaped discs and seats are of stainless steel hardened to approximately 500 Brinell for maximum erosion resistance. Valves are available with screwed ends, and in sizes from $\frac{1}{8}$ " to 3", inclusive.

No. 126—For further information see page 19

Dipper

A new type dipper that is said to offer greatly increased safety in handling corrosive liquids is manufactured by Stokes Molded Products, Inc., Trenton 4, N. J. It is made of Stokolite L-44 compound, which has a virgin rubber base, and is streamlined for lightness. It has an efficient pouring lip and reinforced handle. Stokes says the material is highly resistant to shock, abrasion, heat, and chemical corrosion, and is practically indestructible. It has been successfully tested for corrosion resistance with many acids, salts, bases, and organic materials, under varied atmosphere and temperature conditions. The dipper is made in 1-quart and 2-quart sizes.

No. 127—For further information see page 19
(Please turn to page 152)

Put this Remarkable Instrument to work!

The most talked about new service offered by any supplier of Industrial Lubricants.

"In less than two hours after installation, this instrument showed us how to increase our production by 18%."

—Plant Superintendent

Hundreds of industrial firms including leading steel, locomotive, truck, automobile, aircraft, tool instrument manufacturers and others have profited by this unique industrial service. A demonstration of this service is available to you without charge or obligation. Contact the office nearest you, or write for free booklet at right.

A complete line of quality lubricants for industry:

- Heavy Duty Motor Oils
- Chillo Cutting Oils
- Trojan Greases
- Cisco Compounds
- D-C Diesel Engine Oils
- Plant Machinery Oils
- Plus two hundred other petroleum products



FREE!
This helpful
booklet!



The Industrial Heat Prover is a flue gas analyzer. It tells quickly, accurately and continuously how much fuel is wasted by needlessly heating excess air . . . and how to correct this loss. Send coupon today for more information.

CITIES

SERVICE



CITIES SERVICE OIL COMPANY
Sixty Wall Tower, Room 678
New York 5, N. Y.

Please send me without obligation your new booklet entitled "Combustion Control for Industry."

Name _____

Company _____

Address _____

City _____ State _____

American Folding Chairs

**NEW
IMPROVED
DESIGN!**



BEST FOR EVERY FOLDING CHAIR PURPOSE!

- DURABLE—strong steel frame, reinforced
- SAFE—no tipping, pinching, snagging hazards
- COMFORTABLE—extra-wide, extra-deep seats and backs
- CONVENIENT—fold quietly, quickly, compactly
- RUBBER SHOES—long-life, replaceable
- THREE SEAT STYLES—formed steel; formed plywood; imitation-leather upholstered

OVER EIGHT MILLION IN USE!

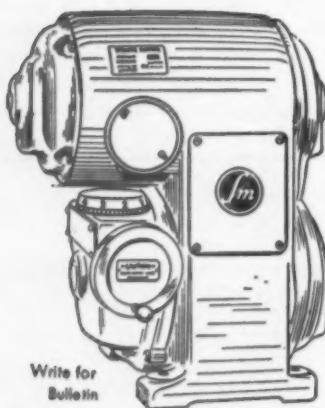
WRITE FOR
DESCRIPTIONS
AND PRICES

American Seating Company

Grand Rapids 2, Michigan

Branch Offices and Distributors in Principal Cities

**Uncork
Bottle-necks**



Write for
Bulletin

**Open up production
bottlenecks with
Sterling Speed-Trol
Electric Power Drives.**

STERLING
ELECTRIC MOTORS

Plants: New York • Los Angeles • Hamilton, Canada
Offices in Principal Cities

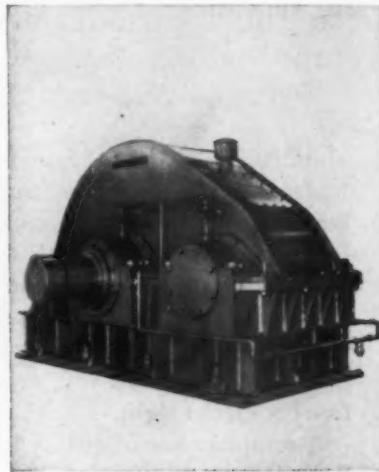
SPEED-TROL (Variable Speed) • SLO-SPEED (Geared) • KLOSED (Normal Speed)

Water Softener

A zeolite water softener for small boiler and industrial plants where the requirements may be under 100 gallons per minute has been announced by Cochrane Corporation, Philadelphia 32, Pa. Designed for low initial cost, simplicity of operation and for low cost of chemicals used, it is supplied in two groups and in single and double units, to meet practically all requirements. Group I comes in 12", 18", 24" and 30" tank diameter, and Group II in 36", 42" and 48" tank diameter. Various types of zeolite—high and low exchange green sand, synthetic gel, and resinous—are offered, making the softener adaptable to different water supplies and periods between regeneration.

No. 128—For further information see page 19

Speed Reducers



New single- and double-reduction industrial speed reducers in ratings up to approximately 3,000 hp are available from Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa. BPT taper-hardened gearing and pinion shafts, and fabricated steel housings are used in both types, the WSH and WDH. Westinghouse says these features permit units requiring minimum mounting space, and effect substantial savings in weight, compared to units using untreated gearing and conventional cast iron housings. Gearing is of the standard AGMA hobbed double-helical type, with a high helix angle for smoother operation and less vibration at higher speeds. This type gearing is said to minimize thrust against either case walls or bearings, and to assure uniform tooth loading and wear.

No. 129—For further information see page 19
(Please turn to page 155)

Ladish Elbows



MARK PROGRESS



...A Complete Size Range
Another Reason to Specify

Controlled Quality
SEAMLESS WELDING FITTINGS

THE COMPLETE FITTINGS LINE
PRODUCED UNDER ONE ROOF...ONE RESPONSIBILITY

LADISH CO.

CUDAHY, WISCONSIN
MILWAUKEE SUBURB

DISTRICT OFFICES: New York • Buffalo • Pittsburgh • Philadelphia • Cleveland • Chicago
St. Paul • St. Louis • Atlanta • Houston • Los Angeles • Havana

From the small fitting that weighs several ounces to the half-ton giant . . . whatever your fittings requirement, the Ladish line provides you with an unrestricted choice of sizes in a complete range of types, weights and materials. In addition, every fitting offers the added dependability assured by the high manufacturing and metallurgical standards of Ladish Controlled Quality.



You asked for it... HERE IT IS—

AO's New
Metal Ful-Vue
Safety
GOGGLE!



HANDSOMER IN APPEARANCE • STRONGER IN STRUCTURE

With the introduction of the F4100 Metal Ful-Vue, AO's protection against the impact of flying particles reaches its highest development. Here in one goggle, with or without side shields, workers can obtain the peace of mind which comes from assured safety . . . the utmost in comfort over nose and temples . . . the very finest in EYE APPEAL PLUS EYE PROTECTION!

American Optical
COMPANY
SAFETY PRODUCTS DIVISION

QUICK FACTS

NEW EYEWIRE—A major contribution to looks with strength. Outer edges are square instead of round with a deep groove to hold lenses securely in place. Beaded engraving adds a distinctive touch. The lightweight eyewire is strong and durable.

NEW RUGGED ENDPIECE—Streamlined . . . with a wide bearing surface at hinge which minimizes temple drop. Screw heads are countersunk and flush with endpieces for added good looks, non-sagging security.

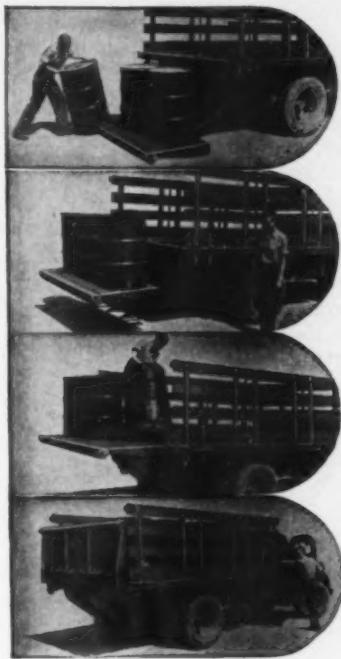
NEW LIGHTWEIGHT TEMPLE—Oval temples instead of round for greater comfort and attractiveness. Easily adjusted, perspiration proof. Insulated semi or half tubing is another appearance improver and will outlast life of the temple. Tubing will not come off and it can't be discolored by dirt or grease. Both the temple and endpiece screws are AO patented "Ever-tite" construction . . . they keep tight in service yet remove quickly when replacing lenses.

IMPROVED GUARD ARMS AND BRIDGE—Guard Arms are newly shaped — longer with more opening for added ease of adjustment. The bridge is double braced with four contact joints—a feature found only in AO Ful-Vue spectacle goggles.

NEW SIDE SHIELD CONSTRUCTION—A real time saver . . . new one-piece binder and eyewire construction eliminates necessity of inserting the screen before inserting lenses! Replacement of lenses can now be made without any interference with or from the side shield. For these and many other reasons, be sure to see the new F4100. YOUR NEAREST AO SAFETY REPRESENTATIVE CAN SUPPLY YOU.

SOUTHBIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

Hydraulic End Gate



Combination hydraulic lift end gate for trucks hauling heavy or bulky cargo is shown in operation in series of photographs above. It can be installed on any make or model truck with suitable body type, and is operated from the truck power take-off. The unit uses only one hydraulic cylinder for all operations connected with the lowering, raising, and closing of the gate. This feature is said to reduce installation cost. The gate is made by the Perfection Steel Body Co., Galion, O.

No. 130—For further information see page 19

Vapor Collector



A motor driven attachment that efficiently removes the particles of oil from mist around machines engaged in high-speed machining operations where oil is used as a coolant is a new product of Brown & Sharpe Mfg. Co., Providence, R. I. The unit is said to promote

(Please turn to page 156)



LABORATORY-TESTED for consistent quality

SOL·SPEEDI·DRI

SLIPPERY FLOORS VANISH WHEN YOU use Sol-Speedi-Dri. It's America's largest-selling oil and grease absorber for good reason. Found far pound price for price, you can't buy a better product. Production controls and selective mining see to that...and laboratory tests safeguard its consistent quality. Adequate warehouse stocks in cities throughout the country — speedy delivery everywhere. Standardize on Sol-Speedi-Dri!

SPEEDI-DRI CORP., 210 W. Washington St., Philadelphia 5, Pa.

WHEN YOU BUY, BE SURE IT'S
SOL-SPEEDI-DRI
Reg. U.S. Pat. Off.
OIL & GREASE ABSORBENT

Warehouse stocks are maintained in principal cities of the United States and Canada.

Inquiries concerning New England and New Jersey should write to Speedi-Dri Corp., Elsewhere in U.S. to Westway Petroleum Products Co., 1724 Chestnut St., Philadelphia 3, Pa.

FREE SAMPLE: Fill out the coupon and mail today for big free sample.

Name _____

Address _____

City _____ State _____

P.V.-50



"Little strokes fell great oaks."

—Ben Franklin's Almanac, 1757

On thy chart of business for the month, beware lest ye line
of rising costs take all ye joy out of ye record production.

—Acme Steel Notebook, 1950*

Efficiency and thrift are good solid American virtues—just as applicable to business as they ever were.

For more than seventy years, Acme Steel methods and Acme Steel products have been helping a lot of companies get improved efficiency and greater thrift. More than 50,000 Acme customers in every industry now enjoy these benefits, particularly in departments and operations concerned with packaging, shipping, materials handling.

Forexample, every day thousands of shipments arrive at their destination securely protected with Acme Steelstrap or Unit-Load Band. Huge logs and tiny toothpicks, gigantic motors and delicate microscopes . . . leather, machinery, food, glass, textiles, chemicals, paper, petroleum . . . Acme methods work for them all.

Illustrated here are two other Acme Steel products and more are listed below. If you would like to know more about them and how they may be able to help you, write on your business letterhead and ask for free booklets on the specific products in which you are interested.

ACME STEEL COMPANY

Dept. P-90, 2838 Archer Avenue, Chicago 8
There are 46 Acme Steel service offices in the principal cities of the United States and Canada.

*The sagest maxims of Ben Franklin, together with modern parallels, appear in Acme Steel Notebook, 1950. We have a free copy for you. Just ask for it.

ACME STEEL

Acme Steel depends on a lot of other businesses, big and small. We buy each year about 35,000 items, ranging from coal and semi-finished steel to paper clips from some 1800 suppliers all over the country.

ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVERSTITCHER machines • ACME SILVERSTITCH stitching wire • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slat stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, cutters, punches, tool mounts, reel stands, coil holders, coil trays.

ACME STEEL CO.
CHICAGO

Want Additional Product Information? See Page 19.

(Continued from page 155)

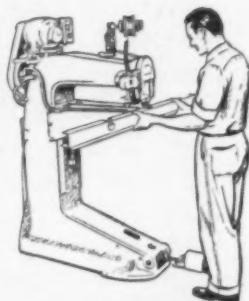
health by removing oil from the air the operator breathes, and safety by preventing the machine controls from becoming coated with a slippery oil film. It stops accumulation of oily dirt on machines, walls, floors, ceilings, etc. The oil drained from the vapor collector is clean and is ready to be used over again. Brown & Sharpe states that in many installations this reclaimed oil soon pays for the unit. The unit can be attached to the floor or suspended from the ceiling.

No. 131—For further information see page 19

Lubricant Dispenser



Acme-Champion Bag Stitchers provide speedy, neat, economical bag closures for food industry.



The heavy-duty Acme-Morrison Metal Stitcher is used extensively in assembling parts in the aircraft industry.

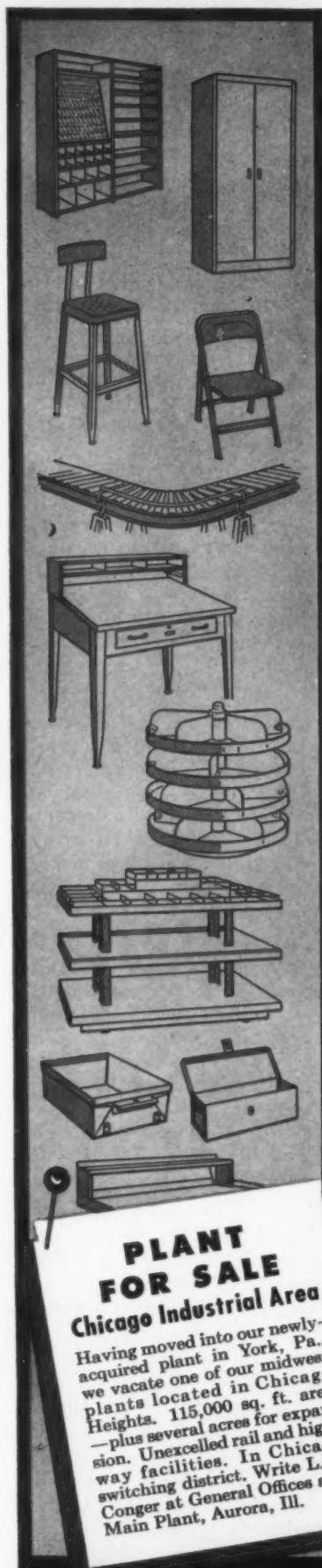
A new electric Lubrigun, Model 249, with pressure primer for dispensing medium and heavy grade lubricants, has been announced by Lincoln Engineering Co., 5783 Natural Bridge Ave., St. Louis 20, Mo. The unit is said to meet the need of industrial machinery for fast, efficient high pressure application of lubricants that will not readily seek their own level. The units are equipped with a manually-operated screw-feed pressure primer, spring loaded to maintain positive and continuous prime even at low temperatures. Portability, compactness, and streamlined construction make the units ideal for servicing machines located in a single area, or throughout the plant. Bulletin 662 available.

No. 132—For further information see page 19

Testing Machine

A moderate-cost simplified table model universal testing machine for tension, compression, flexure, shear, and transverse tests is offered by National Forge & Ordnance Co., Irvine, Warren County, Pa. It is available in two capacities; the 30,000 pound capacity model has additional ranges of 6,000 pounds and 600 pounds; the 15,000 pound capacity model may be used for 3,000 pound or 300 pound testing. Load-

(Please turn to page 158)



**PLANT
FOR SALE**
Chicago Industrial Area

Having moved into our newly-acquired plant in York, Pa., we vacate one of our midwest plants located in Chicago Heights. 115,000 sq. ft. area — plus several acres for expansion. Unexcelled rail and highway facilities. In Chicago switching district. Write L. J. Conger at General Offices and Main Plant, Aurora, Ill.

- Shelving
- Lockers
- Wood Working Benches
- Economy Locker Racks

- Kitchen Cabinets
- Display Equipment
- Hanging Cabinets
- Welding Benches
- Filing Cabinets
- Cabinet Benches
- Folding Chairs
- Drawing Tables

- Storage Cabinets
- Bench Drawers
- Work Benches
- Drawer Units
- Conveyors
- Shop Boxes
- Bar Racks
- Bin Units

- Tool Stands
- Service Carts
- Hopper Bins
- Parts Cases
- Flat Drawer Files
- Tool Trays
- Desks
- Stools

LYON

You pay no more, often less, for the

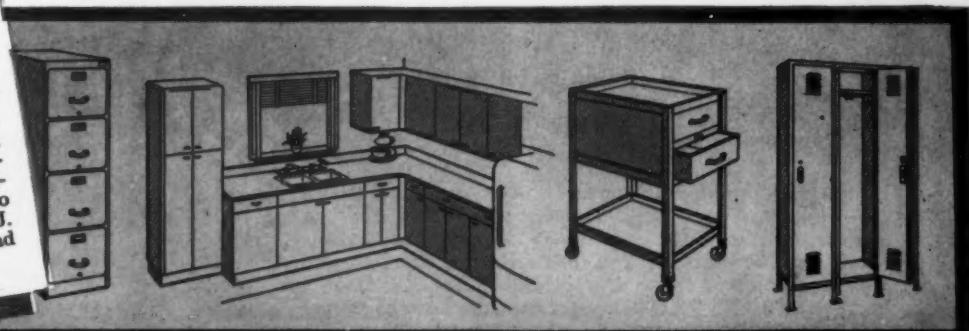
**Extra Quality in
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... whether it's a regular catalogued item or a special contract item made to your specifications.

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METAL PRODUCTS, INCORPORATED

General Offices: 933 Monroe Avenue, Aurora, Illinois
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ABRASIVE SLEEVES, DRUMS AND BELTS
of approved Carborundum quality
meet today's finer finishing needs!

Ask for a copy of our No-Lap catalog. It gives complete details on our many time-and-money-saving products for all abrasive purposes. Samples also available on request.

Cleveland Container representatives have the background . . . the knowledge of today's needs to make it worth your while to ask questions.

May we serve you?

Ask also for a copy of our new Folder identifying and illustrating types and sizes of Cleveland Containers.

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• All-Fibre Cans • Combination Metal and Paper Cans
• Spirally Wound Tubes and Cores for all Purposes

PLANTS AND SALES OFFICES: Cleveland, Detroit, Chicago, Plymouth, Wis., Jamesburg, N. J., Ogdensburg, N. Y. • ABRASIVE DIVISION at Cleveland
SALES OFFICES: Grand Central Terminal Bldg., New York City; Washington Gas Light Bldg., Washington, D. C.; West Hartford, Conn.; Rochester, N. Y.
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**SMALL
PARTS**
Cost less when made by
MULTI-SWAGE

The economy way to get
a million small parts
similar to these —

Examine the tubular and solid metal parts shown here twice size. If you use anything similar . . . in quantities of over a million . . . important savings can be yours. Send us the part and specs. Our quotation will show why the Bead Chain Company's MULTI-SWAGE Process has long been known as the most economical method of making electronic tube contact pins, terminals, jacks and sleeves. And, why more and more users of mechanical parts (up to $\frac{1}{4}$ " dia. and to 2" length) employ our facilities. WRITE for Data Bulletin.
B THE BEAD CHAIN MANUFACTURING CO.,
Tr. Mark 88 MOUNTAIN GROVE ST., BRIDGEPORT 5, CONN.

(Continued from page 156)
ing is mechanical with crosshead speeds infinitely variable from .005" to 6" per minute. Working space between columns is 20" with a 14" crosshead stroke. The unit is 42" high, 64" wide, 1200 pounds.

No. 133—For further information see page 19

Also Noted . . .

A light weight (1½ lbs.), low cost ground clamp, the GC-3, made by The Lincoln Electric Co., Cleveland 1, O., provides a convenient, readily movable, yet solid connection for welding jobs where currents do not average over 300 amperes. Jaw spread is 2½".

No. 134—For further information see page 19

Pennsalt AE-18 is a new, highly concentrated alkaline compound for etching aluminum without forming hard sludge deposits on the bottom of the etching tanks. It is a product of Pennsylvania Salt Manufacturing Co., 1000 Widener Bldg., Philadelphia 7, Pa.

No. 135—For further information see page 19

For emergency use in industrial dispensaries, The Gebauer Chemical Co., 9410 St. Catherine Ave., Cleveland, O., offers S.S. Spray, a non-irritating soapless detergent. Automatically dispensed from a hermetically sealed bottle, it quickly removes oil and grease or ointment dressings from injuries.

No. 136—For further information see page 19

High impact resistance is built into a 12-oz. aircraft grade aluminum alloy "Hard Boiled" safety hat made by E. D. Bullard Co., 275 8th St., San Francisco 3, Calif. Ribbed design is said to furnish ample structural strength while crown remains resilient to absorb impact of falling object.

No. 137—For further information see page 19

American - LaFrance - Foamite Corp., Elmira, N. Y. has announced a new line of Alfo 2½ gal. fire extinguishers said to be twice as strong and 50% lighter (without charge) than the copper units.

No. 138—For further information see page 19

Spang-Chalfant Division of the National Supply Company, Pittsburgh, Pa., has added its own electrical tubing. Known as "Central" electrical metallic tubing, it has an electro-galvanized exterior finish. The interior is finished with an elastic enamel coating. Made in sizes from $\frac{1}{2}$ " to 2" in 10' lengths.

No. 139—For further information see page 19

A new line of sight glasses made from Pyrex polished plate glass, for
(Please turn to page 160)

...the "near editor's" viewpoint

Russians claim invention of Scotch whisky, but switched to manufacturing vodka after the Scots produced an admirable imitation.

It is certainly worthwhile to get together with your competitors once in a while and discover that some of them have more troubles than you do.

One way to help overcome the postal deficit is to reduce congressional franking privileges. Very seldom is the stuff they send out of any real importance.

A summer resort is where the natives live on your vacation money all winter.

Aaron Carpenter

CHAIRMAN OF THE BOARD.



Not every machine can have talent such as this administering to its well-being. But every machine can have Hydro-Drive Hydraulic Oil and Houghton's lubricants for headstocks, ways and slides. They'll make machines happy and care-free, too.

Situation "Gummed Up"?

Here's a handy remedy to have around the shop when there is oxidized oil to be removed from metal parts. It's Gum Solvent "B", which takes gums and sludges into solution rapidly by a simple soaking. Always keep a drum on hand. Use it, too, for cleaning out hydraulic machines and reservoirs, without stopping production. Just add 5% of Gum Solvent "B", based on oil content of the reservoir; run for 100 hours, and dump, then fill with fresh oil, preferably our Hydro-Drive.

How to Get a "Rust Cure"

The hectic days of production to build up metal parts for the National Security program are with us again. Those parts or assemblies must be stored, packaged and shipped to all parts of the world. And that, as in World War II, involves proper protection against corrosion. For a "rust cure" you can rely on Houghton's RUST VETO line of industrial rust preventives. We welcome an opportunity to talk rusting problems with you.

This may be a poor time for advice, But . . .

These days are tough ones for purchasing agents. One sure thing they'll have to buy is aspirin.

Every department is crying for raw materials and the maintenance and processing items which will best handle operational needs, all at prices within reason.

We can't tell a purchasing official how to do his job more painlessly; even if we could, it wouldn't be diplomatic, in these hectic days when what he wants is not advice, but fair-priced materials.

But we might make one suggestion, from a slightly selfish viewpoint: that he buy, wherever possible, from long established sources of supply that will give his company good service and engineering aid, even though the price per pound isn't always the lowest.

Some of our purchasing friends know they can buy industrial oils or heat-treating materials at a lower first cost from others than they do from Houghton. But they take a long-range view; they see the plant man's angle of "lower cost per unit produced"; they want to meet his own preferences, based on experience with certain processing items and the help he gets from the technical staff of the supplier.

So the P. A. says to our representative, in effect: "We know you're not the cheapest, but we also know you'll stand behind your oil, or rust preventive, or salt, to make them perform right, which will save us money in the long run. You did a good job for us through two wars, and we're counting on you in this present crisis."

Our own organization here at Houghton is being geared up to produce more, and our own purchasing department has its troubles, too. Our costs are rising just as yours are, but we're striving to hold the line, and to continue to give our customers good service at no sacrifice in quality. That's how we built this business. And that's how we want to help you build yours!

Free folders you may need:

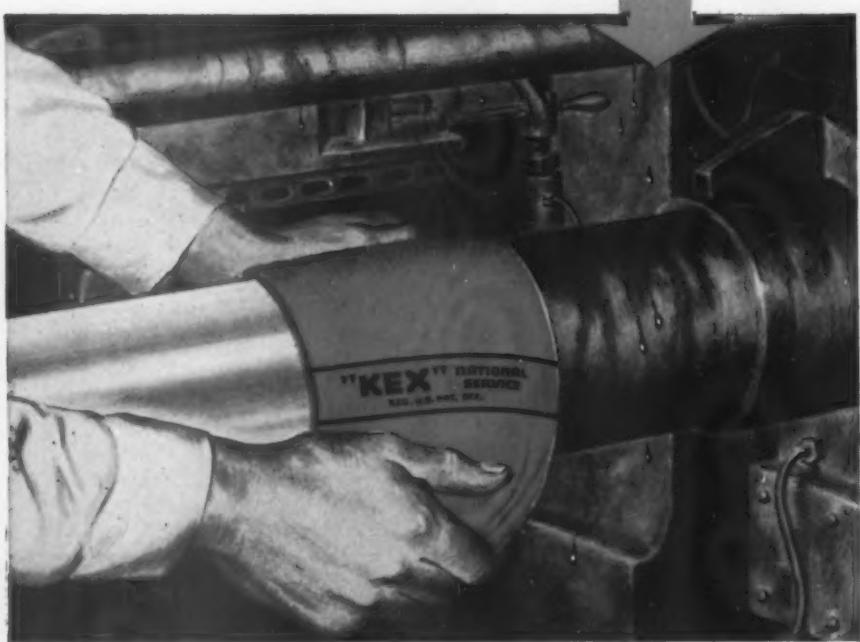
- 1 **Hydro-Drive Hydraulic Oil** — technical folder covering hydraulic oil problems and solutions.
- 2 **Houghton's Grease Booklet** — describing our complete line of solid lubricants.
- 3 **All-Star Line-Up of Rust Preventives** — the Rust Veto series for industry.
- 4 **Hi-Temp Oils** — for safe, efficient lubrication at temperatures up to 500° F.

Write for any or all of these.

E. F. HOUGHTON & CO.

303 W. LEHIGH AVENUE
PHILADELPHIA 33, PA.

KEX INDUSTRIAL WIPING TOWELS OFFER YOU THIS BETTER WAY TO SOLVE WIPIING PROBLEMS!



- **SUPER-ABSORBENT**, and scientifically cleansed to reduce the possibility of infection.
- **SOFTER**—Woven of thirsty cotton—especially for their job—with no harsh abrasives to mar surfaces.
- **SAFER**—Bound at edges...no loose ends to get caught in moving machinery!
- **MORE CONVENIENT**—Made in uniform size, every inch usable, packed in easily stored bundles.
- **MORE ECONOMICAL**—No waste. Nothing to buy—no expensive inventory—just a low monthly rental.

Better All 'Round—Wherever there's an industrial wiping problem, KEX wipes it out! Regular pick-up and delivery. See your classified telephone directory for nearest KEX distributor, identified by this trademark.

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295 Fifth Avenue, New York 16, N. Y.



"KEX"
REG. U.S. PAT. OFF.
**NATIONAL
SERVICE**

(Continued from page 158)
use as peephole and inspection windows on furnace doors, ovens, stills, etc., has been announced by Swift Lubricator Co., Elmira, N. Y. Custom made to order, any quantity from one piece to large production quantities can be furnished.

No. 140—For further information see page 19

Two new brands of oil service conveyor belts, Oil-Resisting and Super Oilproof have been added to the line of The B. F. Goodrich Company, Akron, O. The first is for light oil service, and the second to handle low viscosity oils, plasticizers and solvents used mainly in the plastics and related industries.

No. 141—For further information see page 19

Sterling Electric Motors, Inc., 5401 Anaheim-Telegraph Rd., Los Angeles 22, has added single phase capacitor type motors to its line of "Klosd" drip-proof motors. In addition to the features of the 2 and 3 phase motors, the new motors have a starting relay that eliminates necessity of centrifugal switches or any rotating devices such as throw switches, commutators, brushes, etc.

No. 142—For further information see page 19

Two-and-a-half gallon portable fire extinguishers for water, soda and acid, and foam, manufactured by Walter Kidde & Co., Inc., Belleville, N. J., are now being made of stainless steel. This is said to increase strength and pressure resistance, decrease overall weight, and allow a reduction in price.

No. 143—For further information see page 19

The L. S. Starrett Company, Athol, Mass., has a shock absorbing anvil to convert any standard dial indicator with solid type contact point into a shock absorbing indicator which will be highly resistant to damage from impact. It is described as simple and inexpensive.

No. 144—For further information see page 19

A heavy-duty steel strapping cutter said to be effective in hard-to-reach places has been introduced by A. J. Gerrard & Co., Melrose Park, Ill. The tapered lower jaw can be inserted easily under the tightest strap, it is said. Only slight pressure on top handle is required for cutting heavy strap.

No. 145—For further information see page 19

A metal formed grommet, completely covered with rubber, designed for insulating blanked holes in metal to prevent cutting, chafing, rattling, etc., is offered by Automotive Rubber Co., Inc., 8601 Epworth Blvd., Detroit 4, Mich. Regardless of motion or vibration, the grommet will not loosen or pull out.

No. 146—For further information see page 19

*For
Everything
Electrical*

YOUR BEST

METAL CHOICE IS

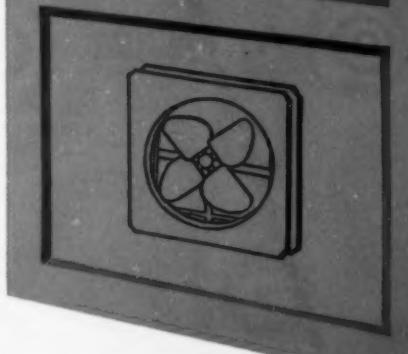
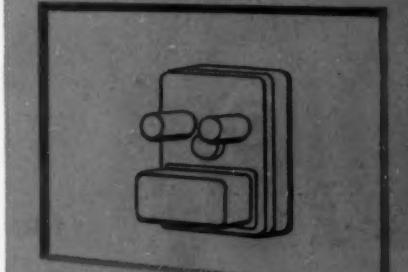
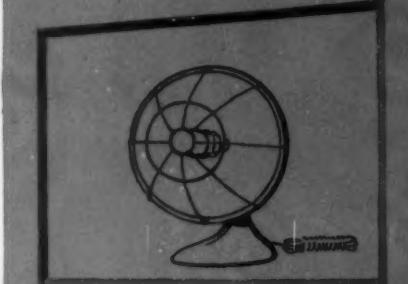
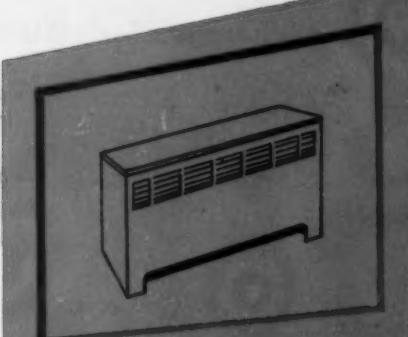
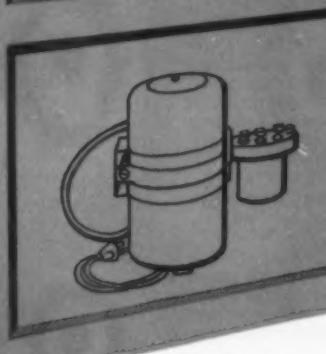
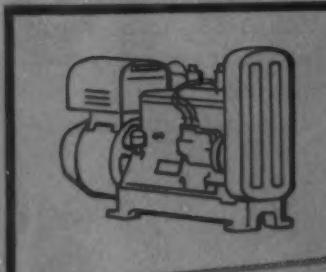
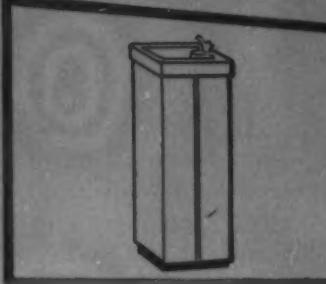
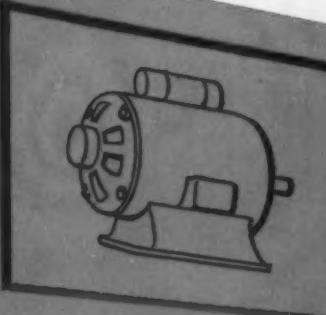
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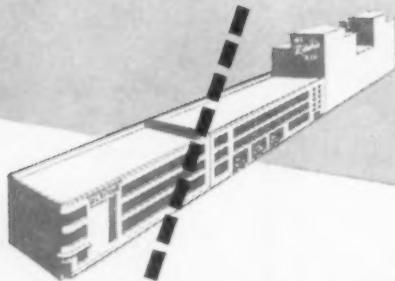
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CLEVELAND.....	3318 St. Clair Avenue
NEW YORK.....	140 Sixth Avenue
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COMPLETE PACKAGING LINE

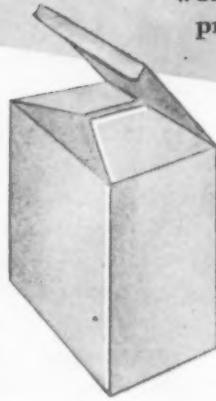
... it pays to Specify Ritchie

The extensive, varied Ritchie line of packaging assures you almost Unlimited Selection... Production Economies of newest type equipment... High Standard of Quality... A Source That Has No "Packaging Pets" but produces all kinds of paper or rigid transparent packages... plus Ritchie's 84 Years Experience in working with leading package users, to produce the right package to suit each product and marketing situation.



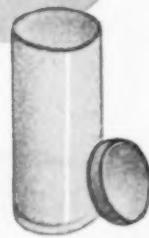
Folding Cartons *Ritchie*

When you have Ritchie make your Folding Cartons, they are produced by the Most Modern Machinery and Methods known to the Packaging Art. For example, the creases on Ritchie Folding Cartons are all pre-folded, making assembling operations easier and faster.



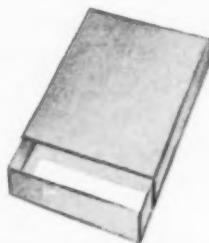
Fibre Cans *Ritchie*

Spiral or Convolutely Wound Fibre Cans, round, rectangular or oval, in almost any size and with a wide variety of closures.



Set-Up Boxes *Ritchie*

Choose from all styles, in rectangular, round or odd shapes, the quality set-up boxes that makers of America's finest merchandise are proud to choose for their products. Leaders in over 150 different industries "Specify Ritchie".



Transparent Packages *Ritchie*

Let us develop a special sales-stimulating package for you that will make your product attractively visible inside the package.



FREE BROCHURE Please send my copy of your brochure "101 Ways to Get Better Packaging", a handy reference booklet every package buyer should have; also suggestions and quotations on Set-Up Boxes Fibre Cans Transparent on Boxes Folding Cartons. Please have a Ritchie Representative call.

W. C. Ritchie and Company,
8830 Baltimore Ave., Chicago 17, Ill.

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PURCHASING

SEPTEMBER, 1950

OFFICE EQUIPMENT and SUPPLIES



—Modernize—

YOUR CATALOG AND BULLETIN FILES

Bring your source information up-to-date on new and improved office equipment and supplies by checking the latest trade literature listed on this page. This special office equipment section is in addition to the regular trade literature section on pages 19, 20, 22, and 24!

— When Writing to Manufacturers Direct, Please Mention PURCHASING Magazine.—

(Continued from page 24)

69. COPYING—Literature describing an exact facsimile, dry developing copying process that is said to save considerable time, labor and dollars for any department handling 50 items or more per day is available from Ozalid, Division of General Aniline & Film Corp., Johnson City, N. Y.

70. STEEL CABINETS—Literature on the new Stelmaster "Tall-Boy" cabinet with a 6,000 card capacity, two full-width letter drawers, and three spacious storage compartments is available from Art Steel Sales Corp., 170 W. 233 St., New York 63, N. Y.

71. ROTARY RECORD FILES—Combined catalog and price list featuring Rotary Record files which use ordinary card records of many grade of paper without punching or other special preparation, has been issued by the Herring-Hall-Marvin Safe Co., Hamilton, O.

72. ACCOUNTING MACHINE—Broadside describes automatic accounting machine which can prepare stock records, accounts receivable, accounts payable, general ledger, payroll, and trial balance and age analysis. This Underwood-Sundstrand machine is featured by unequalled simplicity, easy operation and controlled accuracy. Underwood Corp., Accounting Divn., One Park Ave., New York 16, N. Y.

73. STEEL SHELVING—Steel shelving and equipment for storage, shop, library, etc., are the subjects of comprehensive 52-page Catalog No. 28, fully illustrated. The equipment can be assembled rapidly without tools and features the "strongest 18-gage non-reinforced shelf on the market". Shelves for exceptionally heavy loads have special reinforcement. DeLuxe Metal Furniture Co., Warren, Pa.

74. PENCILS—Sample of pencil featuring strong, smooth lead for commercial use is offered by National Pencil Co., Shelbyville, Tenn.

READER SERVICE

All listings include names and addresses of manufacturers.

However, each one is numbered. If you want to save Multiple-letter writing, just jot down the numbers of the items you want and month of issue, and list them in a letter on your COMPANY letterhead to

Reader Service Dept.
PURCHASING Magazine
205 E. 42nd St.,
New York 17, N. Y.

NOTE: This service also applies to all the new products, equipment and supplies listed on pages 128-160.

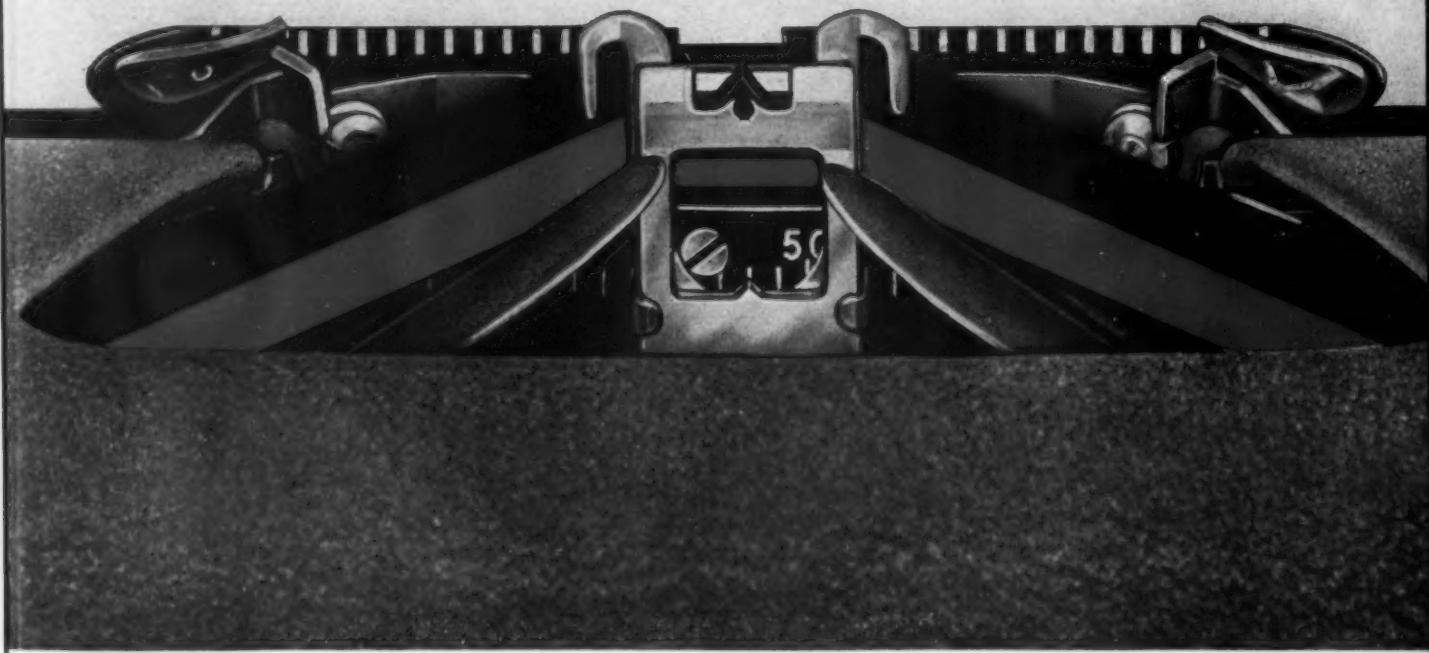
75. BOOKKEEPING—Machine Bookkeeping and Visible Equipment bulletin illustrates posting trays, stands, vertical visible outfit, and indexes and forms for machine posting. National Blank Book Co., Holyoke, Mass.

76. INTERCOMMUNICATION SYSTEM—Executone 1100 series intercommunicating system with exclusive "remote" reply and complete privacy operation, for administrative and industrial use, is illustrated and described in bulletin AIA No. 31-i-51. Electronically matched voice circuits assure faithful, natural voice reproduction. Incoming calls at master are signalled by a soft chime and reminder light. Any number of masters, staffs, amplified reproducers, and special purpose reply stations may be added. Executone Inc., 415 Lexington Ave., New York, N. Y.

77. DISC SOUNDWRITING—Audograph electric sound writing equipment is described in new bulletin. Unit uses Flexograph discs available in 3 sizes of 20, 30 and 62 minutes capacity. Compact and portable, Audograph is 9-1/2" square, weighs 16 lbs. The Gray Manufacturing Co., 16 Arbor St., Hartford, Conn.

78. VISIBLE RECORDS—Acme Visible Records are subject of 16-page booklet which illustrates and describes cards, panels, cabinets, tub desks, holding fixtures, etc. Acme Visible Records, Inc., 122 So. Michigan Ave., Chicago, Ill.

Columbia's
Silk Gauze
. . . the Aristocrat
of typewriter
ribbons



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New Accessories for Better Office Work

Numerous new appurtenances designed for office use increase efficiency and cut costs

Practical new devices range from electric pencil sharpeners to air conditioning units

Many routine jobs and chores are made easier and less boresome by new and improved products

By H. E. GEORGE

There is much of interest in the continuous introduction of new appurtenances for office use. Appurtenances is a good word to use for it connotes things that are adjuncts or incident to the principal office furnishings such as desks and files and business machines and stenographers. Some of the new things may well come within the scope of being gadgets that simplify and make easier a routine job and fill what some are wont to term a felt but unexpressed need for an easier way of doing a simple office chore. Others are substantial contributions to increased efficiency and lower costs.

Real Air Conditioners

For instance, there are many warm days ahead in most areas, hence physical comfort and concomitant efficiency in spite of high temperatures and high relative humidity are of interest—for the rest of this year and the hot seasons to come in following years. And of especial interest are the window sill air conditioning units which perform four of the major functions of air conditioning, namely—cooling, filtering, dehumidifying and circulating indoor air. Aside from the factor of cooling, the filtering of the air and the elimination of soot, grime and dust well warrant consideration of such installations for benefit of the clerical staff as well as the top brass.

Air Circulator

Another interesting unit, though it does not actually cool the air, is a floor model air circulator which by means of virtually draftless air motion imparts a sense of physical comfort even on humid sticky days as it enables the body to dissipate heat and moisture.

Movable Partitions

Movable partitions that can be erected or dismantled without dust or debris, and which have 100% salvage value, have been installed by many companies. These partitions come in wide, flat, reinforced panel units, factory finished in a wide choice of color or wood grain. Steel, glass and wire mesh panel combinations are available, and door units may be installed without moving other panels. All have raceways in base and cornice.

Speaker's Stand

A unit little thought of in the office is a portable speaker's stand, especially designed for use in offices, meeting and instruction rooms. Two-thirds of the top is sloped for easy reading of manuscript, accompanied by flat area, upon which the speaker may place his watch—desirable for varied reasons. The stand has two shelves, the upper of which is convenient for water pitcher and glasses, the lower one being recessed to provide ample foot room.

Folding Chair

A folding utility chair which it is stated will not tip, is a practical unit for use in sales and other meetings. Among the late developments is one made of heavy gauge tubing finished in chrome. This chair has easy rolling casters, and the seat and back are of Duran, a plastic sheeting. The height of the back is 18 inches; seat size is 12 x 13½ inches, and the back is 14½ inches high. The chair is easily folded for storage.

Coffee Bar

A coffee bar especially designed for office and industrial locations is now on the market. It is comparable in size to some of the soft-drink machines that have been in-

stalled in many places. It is 6½' high, 20" wide and 22" deep. This machine provides coffee, with or without sugar and cream combinations, for five cents. It is said that a minimum of 100 employees is generally considered necessary to support an installation.

Swing Table

A swing-table accessory which is attachable to the corner of most desks, wood or metal, serves to convert a flat top to a stenographic desk. It is a sturdy unit which permits swinging the table to one side when not in use, and is adjustable to desired height.

Mail Opener

Among the varied small office tools being marketed is a mail opener with case of die cast aluminum, for opening varied sizes of envelopes without the need of sorting to a specific size. It shears off a thread-like edge from envelopes up to a foot long.

New Typewriter Ribbons

Nylon typewriter ribbons are being used more and more as their merits are proved by use. In some offices it has been found that the Nylon ribbon will give months of service where some other types give but weeks. Furthermore, they are less smudgy, hold the ink uniformly, and produce clean-cut typewritten pages. And a recently introduced silk ribbon is said to cut ribbon changes in half and its unusual sheerness (.003") makes for fine sharp impressions, and better looking carbons.

The Snapator

If you are using many one-time carbon forms, you may be interested in a small device known as the Snapator which is designed to automatically snap apart stacks

of one-time interleaved forms. Movement of a lever controls jaws which grip stubs, separating stubs and carbons in one movement. This device weighs eight pounds and will accommodate any size form.

Stapler-Remover

Another company has introduced a combination stapler and staple remover that is strong enough to staple 32 sheets of 16 lb. bond, and can be used as a tacker for posting notices on bulletin boards or tacking sheets on drawing boards, and finally it is a staple remover which separates stapled papers easily and quickly.

Pin Feed Platen

A device known as the pin feed platen now on the market is said to fit any electric typewriter and to adapt any machine for control-punched forms. It provides precise registration, exact ratchet spacing, and feeds up to 500 sets of forms without reloading. Up to seven and more copies are perfectly aligned.

Electric Pencil Sharpener

An electric pencil sharpener does its job automatically. Upon insertion of a pencil in the device an electric switch is operated, setting the sharpener in action, and when the pencil has been pointed the machine is automatically shut off. This machine gives a choice of three points—medium, fine or extra fine. It is equipped with intermittent type electric motor, 110 volts.

Blue Print Edger

The blueprint edger is a device for applying protective edges to blueprints, posters, maps, drawings, etc. It can be used to bind single sheets of paper in the form of a folder. Either $\frac{1}{2}$ " or $\frac{3}{8}$ " tape can be used. White Scotch edging tape has special adhesive to prevent oozing at the edges of the tape, and permits taped sheets to be filed together without sticking.

Paper Jogger

Low cost portable automatic paper jogger is set into action by the weight of the material being jogged. The operator merely lets the sheets or cards rest on the 10" x 12" table, and after the sheets have been jogged uniformly together, raises them from the jogging table which shuts off the current. A sensitivity knob control adjusts the machine for various paper loads.

Business Machine Stand

Business machine stands that have large retractable casters with compensations for uneven floor surfaces, won't tip, sway, buckle, or creep, according to the maker. These stands have an adjustable top, sizes ranging up to 14 $\frac{1}{4}$ x 16 $\frac{1}{4}$ inches, which provides a firm, secure foundation for almost every make and type of business machine. There is a high or low drop leaf arrangement on either side of the stand.

Pressure Sensitive Tape

A desk dispenser has been developed for easy and wasteless use of pressure sensitive tapes. These tapes have a multitude of practical uses such as mending records, maps, and torn letters; masking out unwanted parts of duplicator copy; labeling file cabinet drawers, folders and section dividers; attaching swatches, clippings and samples to letters; mending currency; double sealing important mail, labeling supply shelves and storage boxes, reinforcing binders and folders, and even revising mistakes in tabulator cards.

Pen-Ink Sets

Time savers, and hence money savers, the dip-set pen ink sets are used by the thousands by companies having large clerical staffs. A set will give about nine-months of trouble free use before it is necessary to replenish the ink supply. The point on the pen is replaceable. It will write a page or more without dipping.

End-Slant File Drawers

A very practical file-drawer development is the innovation of drawers with front and back ends that slant forward and backward automatically as the drawer is opened, providing a generous V-space for working even when the file is crammed with papers. As the drawer is closed, the ends are automatically pulled into place. No space is sacrificed to obtain the working V, and the drawer provides 26 inches of usable, workable filing space under all conditions.

Magnetic Memo Box

An intriguing small number is a magnetic memo-box with built-in note holder, and an automatic pencil that is always there—plus memo sheets. The user merely touches the pencil to the box and it remains there ready for instant use. The

box comes with a supply of 700 (4 x 4) memo sheets.

Welded Transfer Case

Constructed of 24-gauge steel with heavy band iron welded around the open end, welded steel reinforced transfer cases may be stacked twelve high, carrying 60 pounds per drawer without binding or sticking, according to the makers. Top of rear edge is crimped to form a cleat which locks securely over rear edge of upper cleat.

The Sect-O-Desk

The Sect-O-Desk as the name implies is a sectional desk assembly of three pieces in heavy gauge steel. These include two two-section cabinets, and the top which fits snugly over the cabinets providing ample knee space. The top measures 24 $\frac{1}{2}$ " x 50". The cabinets are of standard desk height, 30" x 15", and 24" deep. User has choice of two-drawer letter file, or a three-compartment cabinet with door that can be locked.

Combination Cabinets

A combination cabinet of varied uses, contains two ball-bearing letter size drawers, one double index drawer for 3 x 5" or 4 x 6" cards (3200 capacity); a drawer for special records; a safe compartment with a combination lock; and also three adjustable storage compartments under lock and key. This combination unit is 37 $\frac{1}{2}$ " high, 30 $\frac{1}{2}$ " wide and 17 $\frac{1}{2}$ " deep. Similar unit is available with four ball-bearing letter size drawers, that is, two drawers instead of the adjustable storage compartment.

Automatic Numbering Machine

New automatic numbering machine shows number, date and time in a variety of arrangements. It has a paper trigger which automatically operates the stamping mechanism when a paper is inserted. Machine operates on any type of current, and is constructed to stamp legibly through 12 carbon copies. It is designed especially for carbonized multiple form vouchers and coding. Variations permit up to 12 wheels engraved with figures, letters and characters.

The foregoing are representative of the hundreds of new office equipment and appurtenance products constantly flowing onto the market that are publicised in the news and in advertising. Some are new, and others are improved and refined products that do their job quicker and easier.

Fill it once...

Dip-Less® 444

- EASY TO CLEAN—EASY TO FILL
- WRITES 300 WORDS AND MORE, WITHOUT REDIPPING
- WORLD'S LARGEST SELECTION OF POINT STYLES
- INK-LOCKED AGAINST ACCIDENTAL SPILLAGE

10-DAY FREE TRIAL

We want you to know how good a desk pen can be. We want you to experience the writing comfort, ease and efficiency a Dip-Less 444 can give—in your own office. Thus, this offer. Try one—for ten days—on your own desk—at our risk!

There are absolutely no strings attached—no obligation whatsoever.



Esterbrook
AMERICA'S FIRST PEN MAKER

If there's a writing job to be done, there's an Esterbrook Point to do it.

write for months

Desk Pen Set

- **ALWAYS READY TO WRITE**
- **HOLDS A FULL OUNCE OF INK**
- **CAN'T LEAK—WON'T FLOOD**
- **PERFECTLY BALANCED PEN**



"Ink-locked"
against
accidental
spillage

Single Sets
\$3.75 and \$4.25
(slightly higher in Canada)
Choice of black,
clear, green, gray,
or maroon.

Choose The Right Point For The Way You Write

With Dip-Less 444 Desk Pen Sets you have your choice of world-famous Esterbrook Points—the world's largest variety of point styles. You can choose the precise point for your kind of writing . . . for your particular writing job. There are specific points for shorthand, bookkeeping, accounting, manifolding—*points even for left-handed writers!* And . . . should you ever damage the point of your Dip-Less Pen . . . you can get a new one at any pen counter. You can even screw in this new point yourself!

FREE TRIAL COUPON

MAIL THIS

COUPON TODAY

...TOGETHER

WITH YOUR

LETTERHEAD

THE ESTERBROOK PEN COMPANY,
Cooper Street, Camden, N. J.

Please send me a new Dip-Less 444 Desk Pen Set. It is understood that I may use the set for 10 days and then return it to you—without obligation—if I do not care to keep it. If I elect to keep the set it is understood that your representative will call.

NAME _____

FIRM _____

TITLE _____

STREET _____

CITY _____ ZONE _____ STATE _____

NAME OF STATIONER _____

A Dozen Purchasing Department Forms

Supplied for use in the Forms Forum by O. J. Klein, Purchasing Agent, Anthony Company, Streator, Illinois. The lot includes Pattern and Casting Source Record, and also Scrap Report

The Requisition is prepared by requisitioning department in triplicate, the form being $8\frac{1}{2}'' \times 7''$. It calls for information on monthly use, amount on hand, use, and required delivery.

Mr. Klein states that practically all of the forms with the exception of Material Control records, and the Purchase Record form were designed by his department.

PHONE 2128	PURCHASE ORDER	2015 ORDER NO. PUT THIS NO. ON YOUR INVOICE SUPPLIER'S COPY		
 'ANTHONY COMPANY STREATOR, ILL. <small>MANUFACTURERS OF</small> EQUIPMENT FOR MOTOR TRUCKS, TRACTORS, TRANSPORTATION, CONTRACTORS AND FARM				
To _____	Date _____			
SPECIAL MARKINGS FOR THIS SHIPMENT:				
PLEASE SHIP THE FOLLOWING:				
Via _____	Terms _____	F.O.B. _____		
QUANTITY	UNIT	DESCRIPTION	PRICE	UNIT
DELIVERY DATE _____		REQUISITIONER _____		
ILLINOIS STATE SALES TAX EXEMPTION CERTIFICATE:		1. This order is subject to all terms and conditions appearing hereon and on the reverse side hereof. 2. Acknowledge order, stating prices and definite shipping date. 3. Mail separate invoice in duplicate for each shipment. 4. All shipments must be plainly marked with order numbers, and any SPECIAL MARKINGS, and accompanied by Bill of Lading. 5. Do not produce or ship ahead of schedule without authorization. 6. Make no substitutions without authorization.		
We hereby certify that the article or articles specified in this order are being purchased for consumption or use in industrial processing or for resale in the form of tangible personal property.				

Phone 2128	CHANGE ORDER	
		VENDOR
<input type="checkbox"/> * <input type="checkbox"/>		Date _____ 19_____ Change # _____ To Our Purchase Order # _____
PLEASE CHANGE THE ABOVE MENTIONED PURCHASE ORDER AS FOLLOWS: <hr style="border: 2px solid black; margin-bottom: 5px;"/> <div style="border: 1px solid black; padding: 5px; height: 40px; width: 100%;"></div> <hr style="margin-top: 5px;"/>		
<div style="border: 1px solid black; padding: 5px; height: 40px; width: 100%;"></div>		<small>PURCHASE CREDIT</small>
THE ANTHONY CO. <small>SPECIALLY MADE - ONE-PIECE BALLOONER TO - JULY 1, 1950</small>		

The Change Order form is made in five parts to permit of the same distribution as is made of the Purchase Order form.

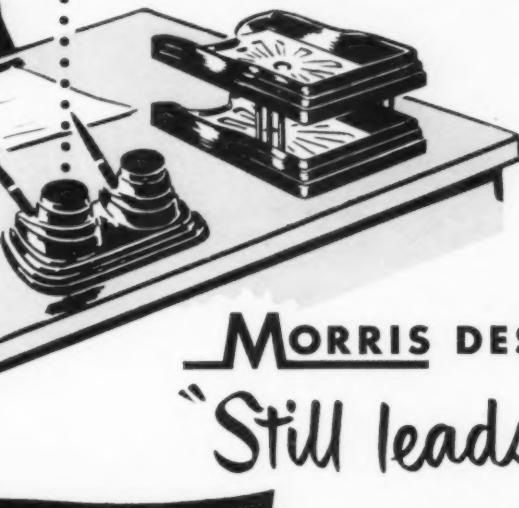
(Please turn to page 172)



Great NAMES IN INDUSTRY

Great DESK EQUIPMENT

They go hand in hand. The quality of Morris equipment has been judged—and established—by efficient executives and by discriminating buyers. That's why those that know use Morris.



Many famous users of these sets, have their seals or emblems imprinted in gold.

MORRIS DESK EQUIPMENT "Still leads the field"

10-DAY FREE TRIAL Plus A SPECIAL BONUS

Order one or as many as you like

MORRIS FOUNTAIN PENS — 5 different and quickly replaceable, "thread in," points. A point for every purpose. A balanced pen for easy writing Grey, Ebony, Maroon, Green, Bronze \$2.75. Walnut, Mahogany, Jade \$3.50.

MORRISET — Instantaneous writing. No refilling—cannot flood. Holds not one, but *two and a half full ounces* of ink for longer periods of writing. Same replaceable points, of course. Grey, Ebony, Maroon, Green, Bronze, \$3.50. Walnut, Mahogany, Jade \$4.50.

Choice of Points: Fine, Extra fine, Medium, Broad, Stub



ENGRAVED MEMO PAD FREE!

On each 12 units ordered you receive our gift of this ultra-smart memo pad and engraved holder absolutely free. Your name engraved on the metal bar that drops as paper is used. Paper is readily accessible—yet always kept neat.



Your name
engraved in
jeweler's bronze

BERT M. MORRIS CO.

8651 West Third Street
Los Angeles 48, California

QUALITY—EFFICIENCY—AND YEARS OF SERVICE.

These have made Morris desk equipment the choice of exacting business men. For those that have never experienced the utmost in smooth, writing efficiency—take advantage of the 10 DAY FREE TRIAL OFFER. There is no obligation, we just want you to know how comfortable long hours of writing can be with these streamlined, smart appearing, balanced writing implements. The equipment that was designed to meet every requirement of the executive or the routine worker.

DON'T DELAY — SEND COUPON TODAY!

You're under no obligation to keep the sets. Just try it and, if you're not convinced that this is the finest writing equipment you've ever used, SIMPLY SEND IT BACK. ↓

Bert M. Morris Co.

8651 West Third Street, Los Angeles 48, Calif.

Please send me _____ fountain pen sets and/or _____ dip sets. It is understood that I am under no obligation if I do not choose to keep them. Your representative may call should I decide to keep the sets.

Name _____

Firm _____

Title _____

Address _____

City _____ Zone _____ State _____

Color desired _____ point desired _____

Name of Stationer _____

(Continued from page 170)

**Left. Ruled Receiving Department copy
of the Purchase Order.**

Right: Here are the Purchase Record and Material Specification Cards used by Anthony Company's purchasing department. The cards are 8" x 5". These are standard forms.

Phone 2128	REQUEST FOR QUOTATION  STREATOR, ILL. <small>MANUFACTURERS OF</small> EQUIPMENT FOR MOTOR TRUCKS, TRACTORS, TRANSPORTATION, CONTRACTORS AND FARM		0150 REQUEST NO.
To _____	THIS IS NOT AN ORDER		
To:	F.O.B.		
Quantity	Description	Price	Unit
			Delivery
PLEASE FILL IN PRICE, TERMS AND DELIVERY INFORMATION ON ITEMS LISTED ABOVE AND RETURN PROMPTLY. WHEN OFFERING SUBSTITUTES -- PLEASE INDICATE CLEARLY!			
		ANTHONY COMPANY By _____ <small>PURCHASING AGENT</small>	

QUOTATIONS REC'D FROM:		ACo 7		
Foundry	Date	Pattern Cost	Qt'y	Casting Price

(PATTERN DESCRIPTION)

The Request for Quotations is made in triplicate, original and one of the carbon copies being sent to two different suppliers. It is printed on letter-size stock.

Pattern and Casting source record, which provides for pattern description, pattern cost and casting price.

(Please turn to page 174)



**It's
Easy to SEE**

**... why everyone likes
to work with National Ring Visible Records!**

National's Ring Visible provides instant visibility for speed in posting or reference, plus edge-flagging of key facts. Providing many uses for every department in every business, here's an item you'll push profitably! National Ring Visible sheets are available in many rulings and eight sizes for every Visible Record need.

Be sure to stock an adequate variety of these popular, easy-to-use Visible Record Sheets, which

are made in both EYE-EASE* and Buff high rag content ledger stock, substance 24. Printed two sides in green ink; punched $7/32''$ multiple round holes spaced $3/8''$ center to center. Boxed 500 and banded 100.

Ring Visible items completely covered in National's popular Records Catalog. Do your customers have copies? Write direct for full information.



National Blank Book Company

New York Boston Holyoke, Mass. Chicago San Francisco

*T. M. Reg. U. S. Pat. Off.





The Receiving Ticket is made up in pad form with two carbons. It is used in conjunction with Receiving Department copy of purchase order.

The Quotation Record form is on an 8" x 5" card.

The Stores Department inventory card is 8" x 5"

This is Purchase Record form for supply items,
the card being 8" x 5".

SCRAP REPORT					Nº 2776
Part No.	Part Name	Dept. No.	Last Operation No.	Last Operation Name	
Quantity Rejected	Date	Cause:			
<p>If Material Is Salvaged — Give Facts:</p> <hr/> <hr/> <hr/> <hr/>					
Inspector _____	Foreman _____				
COST-EXTENSION	QUANTITY	UNIT COST	AMOUNT		
Material					
Labor					
Burden					
	TOTAL				

Scrap Report. It provides for complete identification and record, cause for rejection, salvage data, and cost data.



Cut ribbon changes in half

with UNDERWOOD CORPORATION'S new silk ribbon
In addition to giving you twice the life
with half the trouble . . .

This fine new Underwood Corporation Manifoldo Silk Ribbon gives you other important advantages.

SHARPER, CLEANER IMPRESSIONS

The unusually thin and fine silk fabric used in Silver Box Manifoldo measures only .003 of an inch in thickness. The resulting thin barrier between type bar and paper gives you a much sharper impression. Every character stands out crisp and clear on the paper . . . an important factor to stenographer and executive alike.

IMPROVED MANIFOLD CARBONS

Because the original impression is clearer . . . so is the carbon copy. This means you can get more and better looking carbons with this improved ribbon . . . saving in work and worry for your stenographic staff.

GREATER ECONOMY

The extreme sheerness of the fabric used in Silver Box Manifoldo Silk Ribbons permits a full 18 yards to be wound on the spool without overcrowding. The waste at the end of the ribbon is reduced to a minimum.

These advantages *plus* the outstanding durability achieved by the combination of fine silk and a new, improved ink . . . *plus* the greater convenience of fewer ribbon changes mean that the New Underwood Corporation Silver Box Manifoldo Silk Ribbon is your best buy in a typewriter ribbon. If your local dealer can't supply you, write:

© 1950

Underwood Corporation

One Park Avenue
New York 16, N. Y.
Supply Division
Burlington, N. J.

**WM. G. BRITT NAMED
MCBEE DALLAS MANAGER**

William G. Britt has been named manager of the Dallas office of the McBee Company, manufacturers of special accounting forms and equipment. He previously handled a sales territory out of the Dallas office.



**NIAGARA ANNOUNCES NEW
HAND OPERATED DUPLICATOR**

A hand operated stencil duplicator, known as the "Q" duplicator, is announced by the Niagara Duplicator Co., San Francisco, Calif. It will be presented at the National Stationer's Association convention at Chicago in September.



**NEW TRADE LITERATURE
ISSUED BY IBM**

The following new trade literature has just been released by International Business Machines Corp., 590 Madison Ave., New York, N. Y.:

Accounting Machine, for automatic production of all major accounting records. Bulletin No. 52-8137-0.

Tape controlled automatic carriage with dual feed for IBM accounting machines. Simultaneous printing of two different documents cuts production time in half. Bulletin No. 52-8139-0.

Electric formswriter, for ease, speed and economy for the preparation of all

continuous forms. Partial carriage return keys save time and effort. Fully electric ten touch decimal tabulation keys can be added to keyboard. Bulletin No. 55-8148-0.

Electrographic ink for Mark-sensing. Simple line, made with a single pen stroke provides for positive machine reaction. It contains microscopic particles of graphite that cause an IBM machine to translate marks into punched holes. Bulletin No. 52-8142-0.



ELECTRIC COMPTOMETER ADDING-CALCULATING MACHINE



An entirely new Electric Comptometer adding-calculating machine is announced by Felt & Tarrant Mfg. Co., Chicago. The machine features a key stroke so smooth, cushioned, and quick acting that the term "Floating Touch" is used to describe it.

The operator is fully protected against imperfect key strokes by an entirely new mechanism. The instant a key is fumbled, every key is locked except the one not fully depressed, and this one remains down, easily visible to the operator, who simply completes the key stroke, touches the release button and continues adding.

The new Electric Comptometer has a quiet running motor of the "start and stop" variety, developing terrific torque for fast operation. It runs only when the keys are depressed. The comptometer has a newly designed case, finished in a soft blue-green. Key tops, in colors to harmonize with the case, are made of two-shot plastic. Other features include larger, more legible answer numerals; elimination of ciphers to left of answer; larger answer apertures, counter-bored to reduce shadows; and the use of strong yet light metals to reduce overall weight.



**FORM SYSTEM SAMPLES AVAILABLE
FROM UARCO**

Uarco Incorporated, 141 W. Jackson Boulevard, Chicago, business forms manufacturers, announces that it will make up upon request, a practical portfolio of business forms—for specific businesses or particular applications—of machine or handwritten record systems. The portfolio will consist of actual samples of systems used by companies similar to that of the person making the request.

(Please turn to page 178)

**Holder of Records
—for time to come
RISING IS RIGHT**



Years of handling and constant usage—
Rising No. 1 Index takes them in stride... without splitting or dog-earing. Easy to handle, taking an excellent impression, and your printer's first choice for records—

Rising No. 1 Index

- ✓ White and four colors
- ✓ 100% rag
- ✓ 2 sizes
- ✓ 5 weights

WHEN YOU WANT TO KNOW... GO TO AN EXPERT!



Rising Papers

ASK YOUR PRINTER... HE KNOWS PAPER!

Rising Paper Company, Housatonic, Mass.

FILE
as in *FILE*
MANICURE

FILE
as in *Oxford*

PENDAFLEX®
HANGING FOLDERS

But there's nothing confusing about the results from filing the new Pendaflex way.

Saves \$500.00 per year, per file clerk!

Try it in your filing cabinets, at no cost if it fails to reduce filing expenses 20% or more.

File Clerks, Stenos, love Pendaflex — smart business men will return this ad for free catalog and name of nearby dealer.

(Also available in attractive HOME FILE)

OXFORD FILING SUPPLY CO., Inc.
Clinton Road, Garden City, N. Y.

Name _____

Address _____

City _____ State _____

Interested for office use Home use

COLD FIGURES MAKE HOT NEWS!



Here's the extra executive capacity your firm needs today!

Business is running in high gear. Competent, trained executives are becoming hard to find. Stop looking outside. You have an untapped reserve of executive capacity right in your own organization! It consists of the precious time being lost daily by valuable people, forced to use an antiquated, roundabout way to get their work out.

Free them to accomplish more! How? With Edison Voice Writing—the most direct method of getting action on their thoughts and work.

According to an average of over 3,000 surveys, the Edison Voicewriter steps up the tangible accomplishment of executives by 20% to 50%. And, gains secretaries an average of 33½% additional time—time in which they can assume other tasks. Best of all: it does all this not by making anyone work harder, but by easing their efforts, by simplifying their jobs.

If your company is not now enjoying the 101 benefits of the Edison Voicewriter, do it and yourself a favor by getting the facts—and figures—from Edison. Ask us, particularly, to tell you more about our Survey Service.

And the DISC Edison Voicewriter is the world's finest instrument for the job!

Forget all you ever knew about dictating instruments of the past! Over a score of ingenious features and conveniences—engineered by Edison—make the handling and dispatch of work a brand new experience, an effortless pleasure.

For example: by sheer electronic magic Edison gives you greater clarity range, makes the reproduced voice actually more understandable than the same voice "in person."

Edison's famous Keymatic Index has greater index area providing greater accuracy.

Automatic record positioning, another Edison exclusive, automatically positions the record on the instrument. All you do is slide in the record, flip the cover closed and—presto!—the disc is flat, centered and ready.

Edison also offers you complete enclosure, three choices of playback and a complete system of indexing discs for transcribing, filing or mailing.

No wonder that, in open-minded firms which try them all, the DISC Edison Voicewriter wins the preference more often than all competing makes put together!

DISC EDISON VOICEWITER

another fine product of

THOMAS A. EDISON, INCORPORATED, West Orange, N. J.



This common-sense booklet has proved a revelation to thousands of businessmen. Its 16 pages teem with facts and new ideas. Send for your copy. Use the coupon. Or, for a demonstration without obligation, phone "EDIPHONE" in your city, or write Thomas A. Edison Incorporated, 31 Lakeside Avenue, West Orange, N. J. In Canada: Thomas A. Edison of Canada, Ltd., Toronto 1, Ontario.

Thomas A. Edison

EDISON, 31 Lakeside Ave., West Orange, N. J.

Send me a copy of "Don't Work So Hard" by Roger Denbie, please.

NAME _____

COMPANY _____

ADDRESS _____

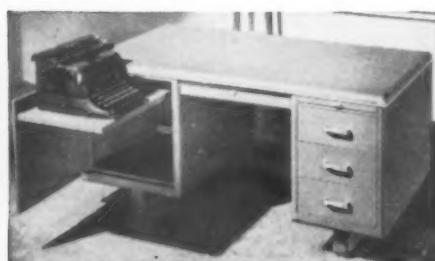
CITY _____ STATE _____



Built With An Interest In Tomorrow...

Which costs more, the desk or the typewriter? Believe it or not, probably the typewriter, yet this Security CRESTLINE Desk will last you a lifetime. Full steel construction plus an ingenious tension-balance typewriter mechanism makes this desk a secretary's delight and a purchasing man's dream come true. Trouble-free operation and a factory fresh appearance that will last and last make Security's CRESTLINE a purchase for today and many, many tomorrows.

For an individual unit or a complete office installation . . . look first to the finest . . . to Security CRESTLINE.



MTPL-60 CRESTLINE Secretarial Desk

SECURITY STEEL EQUIPMENT CORP., AVENEL, N. J.

Crest LINE



NEW PLASTIC PLATES SIMPLIFY OFFSET DUPLICATION

Photospeed Plastiplates which eliminate five of the preparatory steps required by metal offset plates, have no expiration date and are not spoiled by exposure to daylight, are now available from Remington Rand. The new plates make possible wider use of offset duplication for illustrated sales bulletins, direct mail, ad reprints and office forms.

Photospeed Plastiplates do not require mixing or use of a volatile sensitizing solution. They are ready for exposure in a Plastiphoter plate making cabinet after hand application of a prepared mixture. No whirling, pre-etching or counter-etching is required. No developing ink process is necessary. Stenographic or mail room preparation of the plates is simplified by the elimination of "agng" and exposure variations.



Most important, the new plates show clearly the image to be printed as soon as exposed, making possible a visual check before inking takes place on the duplicator. This feature, plus the adaptability of the new plates to black and white—color halftone illustration, makes them ideal for use where office printing is done by local letter shop and offset printers from complete plates. The plates are economical for runs of from 20 to 5,000 and are easy to file for re-runs.

Free experimental kits of Photospeed Plastiplates are available from J. B. Zellers, Duplicator Supplies, Remington Rand Inc., Bridgeport 1, Conn. Specialists at every local Remington Rand office provide free non-technical consultation service on plate preparation by clerical personnel.

ADDRESSOGRAPH APPOINTMENTS

B. L. Meyers has been named Addressograph Sales Manager of the Addressograph-Multigraph Corporation, Cleveland, Ohio. Previously for six years he was Chicago addressograph branch manager.

Edwin H. Denny has been named Chicago branch manager. For the last eight years he has been national sales manager of the Addressograph division of the corporation.

(Please turn to page 180)



"SCOTCH" Cellophane Tape makes everyone's work go faster!



WHISK THROUGH scores of chores in a winkle with "Scotch" Cellophane Tape! It's transparent as glass, sticks at a touch without moistening . . . helps breeze through those annoying little jobs that clutter up an office day.

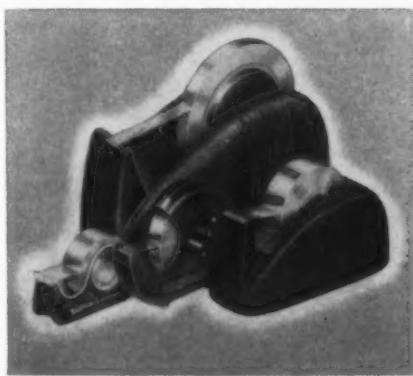
Use it for sealing, holding, mending, marking, protecting, coding, reinforcing . . . it's a real time-saver!

Made in U.S.A. by

MINNESOTA MINING & MFG. CO.
St. Paul 6, Minn.

Also makers of other "Scotch" Brand Pressure-sensitive Tapes, "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-Slip Surfacing, "3M" Abrasives, "3M" Adhesives.

General Export: DUREX ABRASIVES CORP., New Rochelle, N. Y. • In Canada: CANADIAN DUREX ABRASIVES LTD., Brantford, Ontario



SAVE TIME AND TAPE with these handy dispensers. They speed up and simplify all kinds of office jobs.



IMPORTANT: There's more than one brand of cellophane tape. Insist on "SCOTCH" brand, in the plaid container.

Why OMEGA COLOR PENCILS DO A BETTER JOB



MADE IN U.S.A. BY
RICHARD BEST PENCIL COMPANY

- 1 — strong, thin lead holds needlepoint
- 2 — light pressure makes clean, sharp figures
- 3 — 24 brilliant, water-proof colors — will not smear
- 4 — ends colored for instant selection

Plus
FAMOUS
TRYREX
the shape that fits your hand — prevents rolling

OMEGA
COLORED PENCILS

**It will cost
you nothing**

To prove these points at your own desk. This coupon clipped to your business letterhead will bring you a free sample.

Richard Best Pencil Company, Inc.
Springfield
New Jersey

Please send free sample of the Omega Colored Pencil, to my attention:

Name _____

AMERICAN SEATING INTRODUCES NEW LINE OF FOLDING CHAIRS

A new line of folding chairs known as the "Folding Fifties", is announced by the American Seating Company, Grand Rapids, Mich. The new chairs employ the Y-type tubular steel construction, and are featured by a fool-proof 'natural fold' that obviates finger pinching. The chairs come in three models: No. 53, all steel, No. 54 with strong lacquered plywood seat, and No. 56 with leatherette upholstered seat. All have replaceable rubber shoes, and attractively finished metal parts in baked enamel.

1 1 1

REFRIGERATOR WATER COOLER

Bottle type electric water cooler with refrigerator storage compartment, known as Model GC, is announced by Cordley & Hayes, 443 Fourth Ave., New York 16, N. Y. The stainless steel refrigerator compartment has nearly one cubic foot storage space, and freezes over three



pounds of ice cubes. The cooler will serve 50° F. drinking water to about 50 office workers under average conditions. It accommodates standard 5-gallon water bottle. It is equipped with fully sealed hermetic refrigeration system. The compact electro-galvanized bonderized cabinet measures approximately 16" x 16" x 41" without bottle, and has baked neutral gray finish with black recessed base.

1 1 1

SPACE-SAVING AUTOMATIC LETTER-WRITER DEVELOPED

A compact automatic letter-writing instrument, which solves the problem of how to do quantity typing in limited office space, has been developed by the American Automatic Typewriter Company, Chicago.

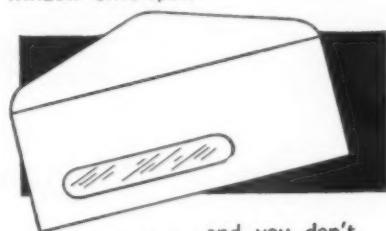
Using a battery of four of the new machines, a typist can:

1. Turn out 500 to 600 personalized letters a day, working exclusively on a letter-writing project.
2. Perform other office duties and at the same time produce more than 150 letters a day.

According to an announcement by the company, the machine, called the Model

10¢
too much

Ten cents, one thin dime, is what it costs most offices to address an envelope. You can save that much — and maybe more — by using Sheppard window envelopes.



. . . and you don't need any window washers on Sheppard's wrinkle-proof, crystal-clear acetate. Write today for free sample.

Sheppard with the flavor seal flap
ENVELOPES
1 Envelope Terrace
Worcester 4, Mass.



THIN PAPERS

Reduce

TYPING, MAILING
and FILING COSTS

Use
ESLEECK
THIN PAPERS

Fidelity Onion Skin

Clearcopy Onion Skin

Superior Manifold

Esleeck Manufacturing Co.
Turners Falls, Mass.

5100 Standard Auto-Typist, has been designed for use with electric typewriters only, making possible ease of typewriter removal and standardized adjustment. Less than a minute is required to remove any electric typewriter, and an equal amount of time to slip it back on the machine.



The Auto-Typist is designed for use with electric typewriters only

Over-all width of the Model 5100 is only a few inches greater than the standard width of a typewriter, effecting an important saving of space in offices and letter shops.

Typing mechanism of the machine is activated at speeds up to 150 words a minute by means of a perforated record roll similar to the roll used on a player piano. Since the machine is designed to write complete letters, each one is cut on a separate record roll.

To operate the instrument, a typist first slips a record roll into an easily accessible record compartment. Next, she places a letter-head in the typewriter to type the salutation. That completes the typist's work. The Model 5100 types the rest of the letter automatically while she starts the others in her battery of machines or goes on with other office routine.

Tests conducted by the American Automatic Typewriter Company have shown that the Model 5100 produces individually typed letters at a cost of less than three cents each.

1 1 1

NEW THIN SILK TYPEWRITER RIBBONS ANNOUNCED BY UNDERWOOD

A new typewriter ribbon, designed to give better service for a longer period of time, has been announced by Underwood Corporation. Known as the Silver Box Manifold Thin Silk Ribbons, they consist of a combination of fine silk fabric with a new and improved ink formula for greater durability. The fabric, which is only .003 of an inch thick, results in sharper and cleaner typed impressions, and 18 yards of ribbon makes the job of changing ribbons necessary only half as often as previously. Another advantage is the improved legibility of carbon copies.

(Please turn to page 182)

WANTED TOUGH JOB WITH P. A.'S

Dependable line of high quality duplicating supplies seeks regular employment in your business. Guarantees hardest work. Sparkling results. Specifically qualified for any kind of machine and job. Pay: lasts longer so costs less. References: leading P.A.'s from coast to coast. Write today to F. S. Webster Company, 7 Amherst St., Cambridge, Mass. Immediate delivery.

HIRE WEBSTER FOR EXTRA VALUE IN EVERY PRODUCT

- 1. Webster's Pencil Carbon** gives at least 100 impressions from a single sheet.
- 2. Webster's Micrometric Carbon Paper** with its exclusive numbered edge eliminates retyping for spacing errors. Gives clean, sharp impressions even after continuous hard usage.
- 3. Webster's complete line** of Spirit duplicating supplies, including Shur-clean Spirossets, spirit carbon papers in all popular colors, fluid and master papers turn out clean, brilliant copies. And Webster's hektograph skin cleaner easily removes ink stains and dirt, leaving hands soft and smooth.

Next time you need long lasting duplicating supplies of dependable quality, order Webster's. Consult your nearest dealer or write to F. S. Webster, 7 Amherst Street, Cambridge, Massachusetts.



F. S. WEBSTER COMPANY

7 Amherst Street, Cambridge, Mass.

Just ONE ORDER

Answers ALL Your Thin Paper NEEDS

SEA FOAM BOND

**for MULTIPLE COPIES
FACTORY AND OFFICE FORMS
DIRECT MAIL STUFFERS
SPACE-SAVING RECORDS
AIRMAIL LETTERHEADS**

Thin, crisp, Sea Foam Bond can standardize lightweight office and factory forms at sizeable savings in time AND money. As America's favorite thin business paper, it serves all your office and factory paper needs.

Sea Foam's lightness cuts down postage — gives you EXTRA SHEETS per pound. Sea Foam's thinness permits many clear carbon copies at one typing. Saves on file space, too. In 7 bright routing colors to keep your record system straight.

**Write for
SEA FOAM'S
FREE Test Kit**

Shows you just how good Sea Foam is for all thin paper needs! Write on your company letterhead.

BROWNVILLE PAPER COMPANY
The Mill of Fine Lightweight Papers
28 Bridge St., Brownville, N. Y.

MIMEOGRAPH EQUIPPED WITH AUTOMATIC STACKER

A. B. Dick Company, 5700 West Touhy Avenue, Chicago, Ill., announces that its heavy-duty, electrically driven Model 450 Mimeograph is now equipped with an automatic stacker. This mechanism is a combination receiving tray and copy stacker. It stacks copies precisely in the receiving tray and eliminates hand jogging.

NEW SERIES OF DESKS AND TABLES ANNOUNCED BY BERGER



The Berger Manufacturing Division of Republic Steel Corp., Cleveland, Ohio, announces its new 5000 series of desks and tables. The desk and table tops are covered with linoleum in a mist green shade to relieve eye strain, and are known as sight-saving tops. With a light reflectance of 35%, mist green is said to meet the eye requirements established by lighting authorities in collaboration with covering manufacturers and Republic Steel. The new top has a chemically impregnated surface which is resistant to ink, carbon and ditto stains.

B. J. HAMILL NAMED MIDWESTERN WOLBER REPRESENTATIVE

B. J. Hamill has been named sales representative in the Midwestern States for both the Copy-Rite line of liquid duplicators and the complete Rite-Copy line of spirit duplicator supplies, for the Wolber Duplicator and Supply Co., Chicago. He will headquartered at 1201 Cortland Street, Chicago, Ill.

STRATHMORE PRESIDENT IS AWARDED HONORARY DEGREE

George E. Williamson, president and chairman of the board of the Strathmore Paper Co., West Springfield, Mass., was awarded the honorary degree of Doctor of Engineering at the 82nd Commencement of Worcester Polytechnic Institute, Worcester, Mass., "In recognition of his extraordinary administrative abilities, conspicuous leadership and devoted service to his Alma Mater."

Mr. Williamson is also president of Premoid Products, Inc., and director of

BECAUSE
MONGOL
stays sharper longer



Stella can take the Boss' dictation without a pause . . . Points are GUARANTEED not to break in normal use . . . Everyone gets more work done. Quality pays out in pencils. Ask your Stationer for a copy of "How to Relate Pencils to Results."

SINCE
1849

TRADE MARKS REG. U. S. PAT. OFF.

EBERHARD FABER

Exclusive Redifitx Features

W-2

1950 TAX FORMS

IN STOCK AT LOWEST PRICES

Federal • State • Social Security

N. Y. FORM 105

for

TABULATOR-N.C.R.-ADDRESSOGRAPH

**NEW
STANDARD
Redifitx BUSINESS
FORMS**

**CONTINUOUS SINGLES
INVOICES—CHECKS
BILLS OF LADING**

**NO QUANTITIES TOO SMALL
FAST DELIVERIES**

**PRODUCED ON
POST WAR ROTARY PRESSES**

**CONSOLIDATED
BUSINESS
SYSTEMS, INC.**

30 VESEY ST., N.Y. 7, N.Y., DEPT. 006

the Rising Paper Co., Old Colony Envelope Co., Springfield (Mass.) National Bank, and the Boston Manufacturers Mutual Fire Insurance Company. He is a member of the executive committee of the American Paper and Pulp Association, of the Writing Paper Manufacturers Association and Associated Industries of Massachusetts. He has been a member of the joint committee on vocational education of the Pulp and Paper Industry of the United States and Canada since its inception in 1918 and is now its chairman.

**NEW STENCIL ANNOUNCED
BY FRANKEL MFG. CO.**

New Klean-Write perforated film stencil which is handled without muss or fuss and is simple to use, is announced by The Frankel Mfg. Co., 1716 Arapahoe St., Denver, Colo. The new stencil is said to completely eliminate possibility of



glue on the operator's hands—glue on the mimeograph machine—or sticking together of stencils when filed. After the stencil is cut, the film is torn off along the perforation line, the remaining film covering the glue line. Stencils are featured by non glare, long runs, and sharpness. They are available in blue, green, white, yellow and black. Samples available on request.

**DICTAPHONE CORP. ANNOUNCES
NEW TIME-MASTER FEATURES**

Dictaphone Corporation announces new developments in its portable Time-Master dictating machines and accessories. These include lightweight Time-Master, control-center hand microphone with tilting head, small desk microphone, non-directional lapel microphone, dynamic chest microphone, high fidelity executive desk microphone, and seamless plastic Memobelt. Outer casings, base plates and internal parts are made of magnesium, making the weight of the Time-Master approximately 16 pounds. This compact dictating machine is engineered to operate on a-c or d-c current. Among the outstanding developments is the new seamless Memobelt, this exclusive recording medium is made of extruded plastic, reflecting a lower price and making the cost for cost for fifteen minutes of continuous dictation but five cents.

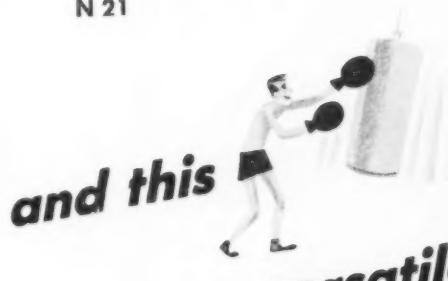
(Please turn to page 184)

See this heavyweight punch

**up to 4 holes —
in 12 sheets
in one operation**



N 21



and this

versatile lightweight



N 22

So small it fits easily into center desk drawer. So handy you'll wonder how you ever got along without it. This fixed punch—for 2 3/4-inch centers—takes any size sheet. See this B & P Master Punch. Try it.



*FOR EVERY RECORD —
A WAY TO KEEP IT*



Standard



product

BROOKLYN 1, N. Y.



FREE SURVEY REVEALS SAVINGS IN DUPLICATING METHODS

Businessmen who require office duplicated letters, bulletins and forms will find they can use profitably the data provided by the new "Analysis of Duplicating Requirements" conducted by Remington Rand duplicating specialists.

Designed to uncover time and money savings in duplicating procedures, the survey records the proportionate volume of different kinds of office duplication used and needed. Suitability of copy preparation methods and facilities is checked. More important, the analysis highlights existing duplicating jobs where a change in method will produce the needed copies faster, more economically and with better print work.

From the completed survey the businessman learns how he can realize the advantages of offset duplication, how he can cut plate preparation time by eliminating "outside" plate supplies and is informed, without obligation, whether or not modernized duplicating facilities will create new and beneficial uses for promotional or informational printed material. Typists and artists are questioned briefly to determine how much time can be saved in their copy preparation.

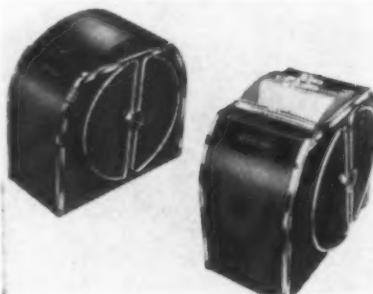
The advantages of direct image copy preparation are measured for every small quantity duplicating operation. Where bulletins are illustrated the survey compares present methods against standards achieved with the newest duplicating methods.

Another phase of the analysis, called the Plastiplate Press Test, is conducted for the Duplicating Department. Pre-printed Plastiplates are furnished free and demonstrated on the press by the Remington Rand consultant. Elimination of up to five preparatory steps is suggested for the press operator who uses metal plates.

Remington Rand's "Analysis of Duplicating Requirements" is available from any local office of the company, or by writing Remington Rand, Business Machines and Supplies Division, 315 Fourth Avenue, New York 10, N. Y.



LOCKED COVERS AVAILABLE FOR H-H-M ROTARY FILES



New, removable, key-locked covers for their small, hand-operated, desk-type, Rotary Record Files have just been announced by the Herring-Hall-Marvin Safe Co. of Hamilton, Ohio. It is claimed that



GILBERT PAPER CO. ADDS NEW VELLUM, 25% COTTON FIBER

The addition of Gilbert Vellum, 25% new cotton fiber, to its line of papers is announced by the Gilbert Paper Co., Menasha, Wis. This new sheet embodies several qualities for stationery and specialty printing purposes. It has a fine laid finish that marks it as a distinctive letterhead paper, and the surface is particularly receptive to writing and printing processes, especially lithography. The 25% cotton fiber content gives crispness and toughness to the new vellum, which also has excellent folding qualities. Samples will be furnished upon request.

Weldon Roberts Erasers

Correct Mistakes in Any Language



JET Eraser

Cures erasers "losers", gratifies eraser users. Saves no end of time. Cylindrical stick eraser of finest rubber; choose RED FOR PENCIL ERASING, GRAY FOR INK.

POCKET CLIP STYLE FOR GENERAL USE
BRUSH WHISK STYLE FOR TYPISTS (illustrated)
Refills, of course.

HI-POPULARITY 'CONVENIENCE' ERASER In Attractive Transparent Holder



Not a mechanical gadget.
Just unscrew the cap and
move the eraser forward.

Tops for typing, accounting,
drafting, executive,
professional and student
use.

Ask your stationer to show
you WELDON ROBERTS
'JET' ERASERS. Look for —
buy from — this Jet
Display Card that you'll see
in many stores.

WELDON ROBERTS RUBBER CO.
Newark 7, N. J.

KOH-I-NOOR PRODUCTS

62 Years Ago KOH-I-NOOR

Made the FIRST Drawing Pencil . . . in 17 DEGREES, 6B to 9H. Since that time no other pencils have approached Koh-I-Noor's Record for Unfailing Uniform Performance.

No Matter What Your Requirements . . .
you will find a KOH-I-NOOR
Product to satisfy you completely

**NOW
Available**
#1600 KOH-I-NOOR
Polycolor Pencils
with IMPORTED Leads
in 66 colors

The RIGHT pencil for the RIGHT job

DRAWING PENCILS
COPYING PENCILS
WRITING PENCILS
CHECKING PENCILS
COLORED PENCILS
OFFICE PENCILS
ART PENCILS
HOLDERS and LEADS
PENHOLDERS and ERASERS



KOH-I-NOOR PENCIL COMPANY, INC., BLOOMSBURY, NEW JERSEY

GUIDE SIMPLIFIES SELECTION OF COLORED TAB GUIDES

Colored celluloid guide windows announced by the Herring - Hall - Marvin Safe Co., Hamilton, Ohio, facilitate the use of colors in H-H-M clear insertable celluloid guides for guiding records in their rotary record files. All colors are stocked in two sizes, 1 x 3 $\frac{1}{8}$ and 1 $\frac{3}{8}$ x $\frac{1}{8}$, and are said to fit any insertable guide tab for inserts of these dimensions. The windows are packaged in books of 50 each, by color and width, in perforated slips. When the windows are inserted in guide tabs with prepared paper inserts as one unit, they are said to make the insertion of the two pieces easier than the insertion of the paper insert alone.

FAST WORKING, BIG CAPACITY CARD RECORD DESK ANNOUNCED



A new card record desk that can be worked faster than other types of card cabinets, with a much larger capacity, has just been introduced by The General Fireproofing Company, Youngstown 1, Ohio. They are lower, wider and deeper than previous models and can be used conveniently from a seated position.

Called the Super-Carder after its "cousin" the Super-Filer, the new card record desk has some of the latter's rapid filing characteristics. Cards slant to the rear, fitting in trays which slope at the front and back to permit better accessibility—cards have a 2" angle spread at the top.

For tabulating cards a 2-position front plate compressor is included. This locks the cards to prevent them from curling or being damaged when the compressor is in the rear position. When the compressor is unlocked in the slanted forward position, the cards can be handled conveniently.

An outstanding characteristic of these cabinets is their flexibility. The posting table moves back and forth easily and can be placed in any desired position. It can be attached between two cabinets or furnished with legs on one side and attached to a cabinet on the other. The cabinets themselves can be grouped in various positions so that the user can organize her work efficiently to meet particular requirements.

The Super-Carder is available with eight drawers for filing five rows of 5" x 3", ten rows of 2 $\frac{1}{2}$ " x 3", and three rows of tabulating cards; and with five drawers for filing four rows of 6" x 4" and three rows of 8" x 5" cards and six rows of microfilm. If less drawers are needed, false panels can be placed in the bottom drawer positions.

Business firms throughout the country are discovering new economies through use of the Remington Electri-economy Typewriter—the new electric typewriter that can slash your typing costs, increase your typing output and perform all your typing requirements with greater ease—greater speed—greater accuracy.

In test after test where the Remington Electri-economy Typewriter has been installed, the increased typing output is piling up extra profits—10%...20%...50% and even higher are the amazing savings percentages reported by many highly satisfied users.

Mail the coupon today for the amazing economy story of the Remington Electri-economy Typewriter.

MAKE THE Electri-economy

TEST IN YOUR OFFICE TODAY!



Remington Rand

THE FIRST NAME
IN TYPEWRITERS

Remington Rand, Room 2048, 315 Fourth Avenue, New York 10, N. Y.

- Please send me FREE copy of "Electric Typing vs. Manual Typing."
- Please have your representative call to make FREE Electri-economy Test in my office—without obligation, of course.

Name _____ Company _____

Address _____

City _____ Zone _____ State _____

Remington Rand Inc.



From pig iron to profit with the dotted line

To make that profit, this big manufacturer must keep down not one, but *nine* operating costs: buying, receiving, stockkeeping, producing, selling, delivering, billing, collecting, disbursing.

These are the 9 Main Jobs every business — big or little — must do. The business geared to do them smoothly, without red tape, gains every penny of profit that quiet efficiency yields.

Moore "dotted line" forms lower cost because they simplify systems and speed up work flow. A whole business pools its efficiency when forms are consolidated, writings reduced and handling speeded.

Moore makes every type of form for all business uses. They range from a simple 2-part repair order pad to 14-part machine-written continuous forms that detach at the perforation—Moore's dotted line.

Should *your* business cut costs further? Let a Moore representative show you forms that simplify and economize. Or write any factory: Niagara Falls and Elmira, N. Y.; St. Paul, Minn.; Denton, Tex.; Los Angeles and Emeryville, Calif.; Salem, Ore.

MOORE

BUSINESS FORMS, INC.

Offices in over 200 cities. Regional factories and distribution points in Canada also * * * THE RIGHT BUSINESS FORM FOR EVERY FORM OF BUSINESS!





TAMES A POWER THROB

FLEXINEERING ELIMINATES VIBRATION ON TUG DIESEL EXHAUST
... PROVIDES SMOOTHER POWER ... COOLER OPERATION

When the giant 16 cylinder, 1750 horsepower diesel engine of the new tugboat, Grace Moran, roars into action, there's a smooth purr of silky power. And one of the keys to this vibration-free operation is "flexineering"—the scientific engineering of flexible metallic tubing to industry's specific needs.

From the exhaust to the stack is a five foot length of Penflex air jacketed tubing which achieves a circulation of air and an efficient cooling action. Tough, rugged tubing that keeps ex-

hausts as tight as a pipe . . . yet provides all of the flexibility necessary to "soak up" the constant vibration. Whether your problem is vibration in exhaust or air lines . . . the transmission of liquids, volatiles, granular material or coarse abrasive products . . . or even the protection of fine lead wires on instruments, "flexineering" has the answer for you. Penflex engineers will be glad to work with you in the application of tubing from $\frac{1}{8}$ inch I. D. on up to 24 inch I. D. . . . Write today for your copy of "Flexineering."

PENNSYLVANIA FLEXIBLE METALLIC TUBING CO.
7218 Powers Lane Philadelphia 42, Penna.

Branch Sales Offices

CHICAGO • HOUSTON • LOS ANGELES

BOSTON • NEW YORK • CLEVELAND

enflex... HEART OF INDUSTRY'S LIFE LINES

Copyright 1949—Penna. Flexible Metallic Tubing Co.

Among the ASSOCIATIONS

THIRD N.A.E.B. PURCHASING INSTITUTE HELD AT UNIVERSITY OF COLORADO

The third Purchasing Institute of the National Association of Educational Buyers was scheduled to be held at The Summer Science Camp, The University of Colorado, Boulder, Colorado, from August 28 to September 1.

Eleven general purchasing topics or problems were listed for discussion. Lecturers were to attack each problem in the course of a one-hour lecture each morning and afternoon session with question periods of a half-hour following. All institute lecturers were to be present for these periods.

The topics included:

The Place of Purchasing in the University Administrative Organization

Organization for Effective Purchasing

Ethics and Public Relations in Purchasing

Essential Purchasing Forms, Records and Reports

Essential Factors in a Purchasing Decision: Quality, Quantity, Price, Service

Legal Aspects of Purchasing

Organization and Operation of a Receiving and Stores Department

(Please turn to page 190)

Discussing Plans for Southwest Conference



Members of the District 2, N.A.P.A., Activities Committee are shown above conferring with J. D. Lively, right, president of the Purchasing Agents Association of Fort Worth, which will play host to the 4th Annual Purchasing Conference on October 4 and 5. The conference, which will take in all associations in District 2, will be held at the

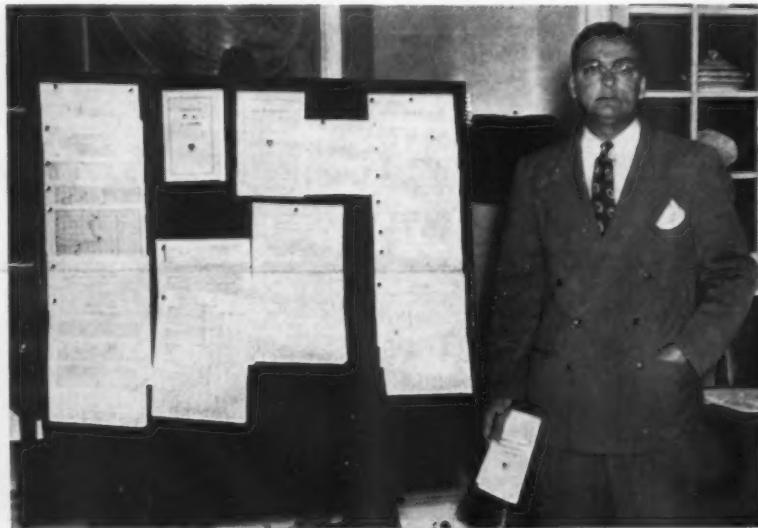
Texas Hotel, Fort Worth.

Committee members above, left to right, are: J. B. Thompson, Shell Oil Company, Houston; C. D. Wilson, Lone Star Gas Company, Dallas; R. W. Seipel, Texas Electric Service Company, Fort Worth, and Sam H. Harper, Pure Oil Company, Houston. Mr. Harper is N.A.P.A. vice-president for the district.

Scenes At The Recent Carolinas-Virginia Association Meeting



New officers of the association are, left to right, C. L. Wywick, secretary-treasurer; James M. Berry, president, and W. G. Haddrell, vice-president.



Mr. Wywick with an exhibit of N.A.P.A. service releases and pamphlets, and copies of the addresses made at the recent national convention in Cleveland.

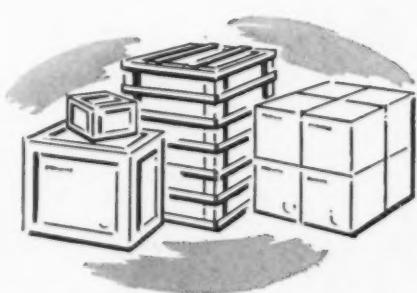


BARRELS, CARBOYS, ETC.

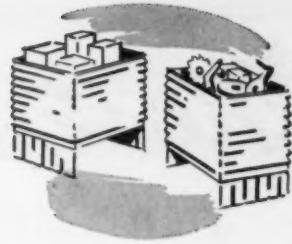
Battery trucks handle foods and inflammables with no danger of contamination or fire.



Battery trucks reduce operator fatigue because they're smooth and easy to handle.



CRATES AND BOXES IN UNIT LOADS
Battery trucks' floor-hugging stability permits high stacking of heavy loads with complete safety.



PACKAGES AND SMALL PARTS

Battery trucks cut handling costs because they position loads faster, lift and go at same time.

Handle These Materials Faster, Cheaper with **GOULD-POWERED TRUCKS!**

Gould "Thirty" Batteries will solve your materials-handling power problems—keep materials moving months after ordinary batteries have begun to slow down. 96% of the working surface of Gould's new "Z" Plate is regenerative power-producing material that renews itself every day the battery is in use! The "Z" grid itself is 66% more resistant. Grid porosity is reduced 85%.

The **GOULD "THIRTY" BATTERY**
with New "Z" Plates is
America's Finest Industrial Truck Battery!

GOULD

STORAGE BATTERIES

GOULD-NATIONAL BATTERIES, INC.*
TRENTON 7, NEW JERSEY

Always Use Gould-National Automobile and Truck Batteries

*Formerly Gould Storage Battery Corporation

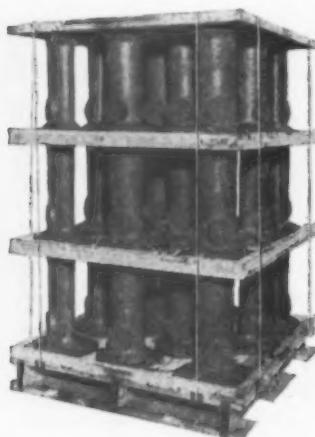
Tie it tight... THAT MEANS GERRARD!

• There's no doubt about the *tightness* of a tie when you use Gerrard Round Steel Strapping. Millions of people who receive bundles tied by the Gerrard method can testify that Gerrard Steel Strapping keeps packages neat and firm, and their contents safe and secure. That's the kind of protection your packages should have.

In your plant, Gerrard Strapping will save you money. Gerrard Steel Strapping costs about 40% less than any other type of metal reinforcement. And the simplicity of Gerrard Steel Strapping procedures will speed up binding

and packaging operations. Every Gerrard machine tensions the strapping, and forms its own twisted seal, trimmed smooth with no exposed ends.

The Gerrard Strapping method is equally adaptable to small parcel post packages and carload shipments of steel pipe and plate. Write for our free books, *Blue Book of Packaging* and *Q Model Semi-Automatic Bundling Machine*. Then consult a Gerrard engineer about your packaging problems. His services are available free of charge. **GERRARD STEEL STRAPPING COMPANY, 4713 South Richmond St., Chicago 32, Ill.**



1465 lb. palletized load of housings secured with four 10 ga. Gerrard Steel Straps. Because it's round, Gerrard Straps clinch tightly and evenly. Photo courtesy of International Harvester Co., Industrial Power Division.



Gerrard TE Machine on conveyor line. Machine is on suspension arm over plate that closes carton flaps. Operator quickly drapes strapping, then tensions, ties and cuts it in one machine-operation.



Model Q, semi-automatic . . . tensions, ties, cuts strapping and sets itself for the next tie . . . all in one operation. Bundling of shingles (above), cartons, newspapers and extra-sized packages proceeds rapidly.



Gerrard TA Machine quickly and easily secures a parcel post package. Many users report damage claims sharply reduced.



Production line operations move smoothly with Gerrard Steel Strapping. Perishable goods enjoy unrivaled safety from plant to destination.

**GERRARD
ROUND STEEL STRAPPING**

UNITED STATES STEEL



(Continued from page 188)

Problems in the Purchase of Office Equipment and Supplies

Problems in the Purchase of Operational and Maintenance Equipment and Supplies

Problems in the Purchase of Paper, Printing and Duplicating Services

Problems in the Purchase of Dormitory Furniture and Fixtures

The Institute staff was composed of Leslie F. Robbins, University of Colorado; J. J. Ritterskamp, Jr., Washington University, St. Louis Mo.; and Charles W. Hayes, Emory University, Georgia.



J. J. NOEL NAMED CHICAGO BUSINESS SURVEY CHAIRMAN

John J. Noel, Purchasing Agent for Culligan Zeolite Company, has been named chairman of the Business Survey Committee of the Purchasing Agents Association of Chicago. The committee prepares the nationally-known monthly summary of business conditions in the Chicago area, compiled from reports sent in by several hundred members of the association.

Mr. Noel is vice-president of the North Shore Council Boys Scouts of America, and chairman of the Chemical Group of the National Association of Purchasing Agents.

Other members of the Business Survey Committee are: J. C. Frehner, Bowman Dairy Company; N. F. Van Parys, Bell & Gossett Company, and O. W. Lawrence, National Die Casting Company.

F. E. Hammes, Edward Hines Lumber Company, Chicago 2, Ill., is the new publicity chairman of the Chicago association.



ROCHESTER ASSOCIATION PLANS INTENSIVE MEETING SEASON

The combined program and educational committees of the Purchasing Agents Association of Rochester, under the leadership of Joseph Ernst, have been working diligently throughout the summer months to complete meeting plans for the fall and winter season.

With the exception of "Executives' Night" and the "Christmas Party", the main theme of all the meetings will be "Management Relations". Each particular evening will cover some phase of this relationship. Speakers well versed in their own fields will be on hand to elaborate on these relations. The educational committee is prepared at the same time to conduct a one hour forum before the regular meeting in an attempt to solve any and all purchasing problems that may be faced by the members.

The 1950-51 season bids fair to be the best the association has had from a program standpoint, it is reported, and a standing invitation has been issued to members of the N.A.P.A. in a position to do so to drop in on the monthly meetings and exchange ideas.

(Please turn to page 194)

Specify Thermoid Conveyor Belting



Thermoid Ruff-Top Conveyor Belting "Floats" Packages On 35-Degree Incline!

Save time—save money—save labor. Specify Thermoid Ruff-Top Belting

Thousands of small, rough, irregularly-shaped points of soft rubber handle packages or cartons with full gripping power . . . up or down inclines as much as 35 degrees. Light packages literally "float" on the soft surface that allows the gripping action of the belt to take maximum effect.

Whatever your belting problems, you can count on Thermoid's continuing research and product development for uniform top quality in all types of conveyor belting. To insure long life and low maintenance cost, specify

Thermoid Conveyor Belts when you buy conveyor systems.

For replacement belting your Thermoid distributor carries a full stock of Thermoid Belting to meet your requirements. If you have an unusual application, your Thermoid distributor can call on the Thermoid field representative whose broad experience in all fields of industry equip him to help you select the right Thermoid belt for your job.

For greater economy, longer service life and larger load capacity, specify Thermoid.

It will pay you to **Specify Thermoid**

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

**Thermoid
Company**

Main Offices and Factory • Trenton, N. J., U. S. A.
Western Offices and Factory • Nephi, Utah, U. S. A.
Industrial Rubber Products • Friction Materials • Oil Field Products

New!

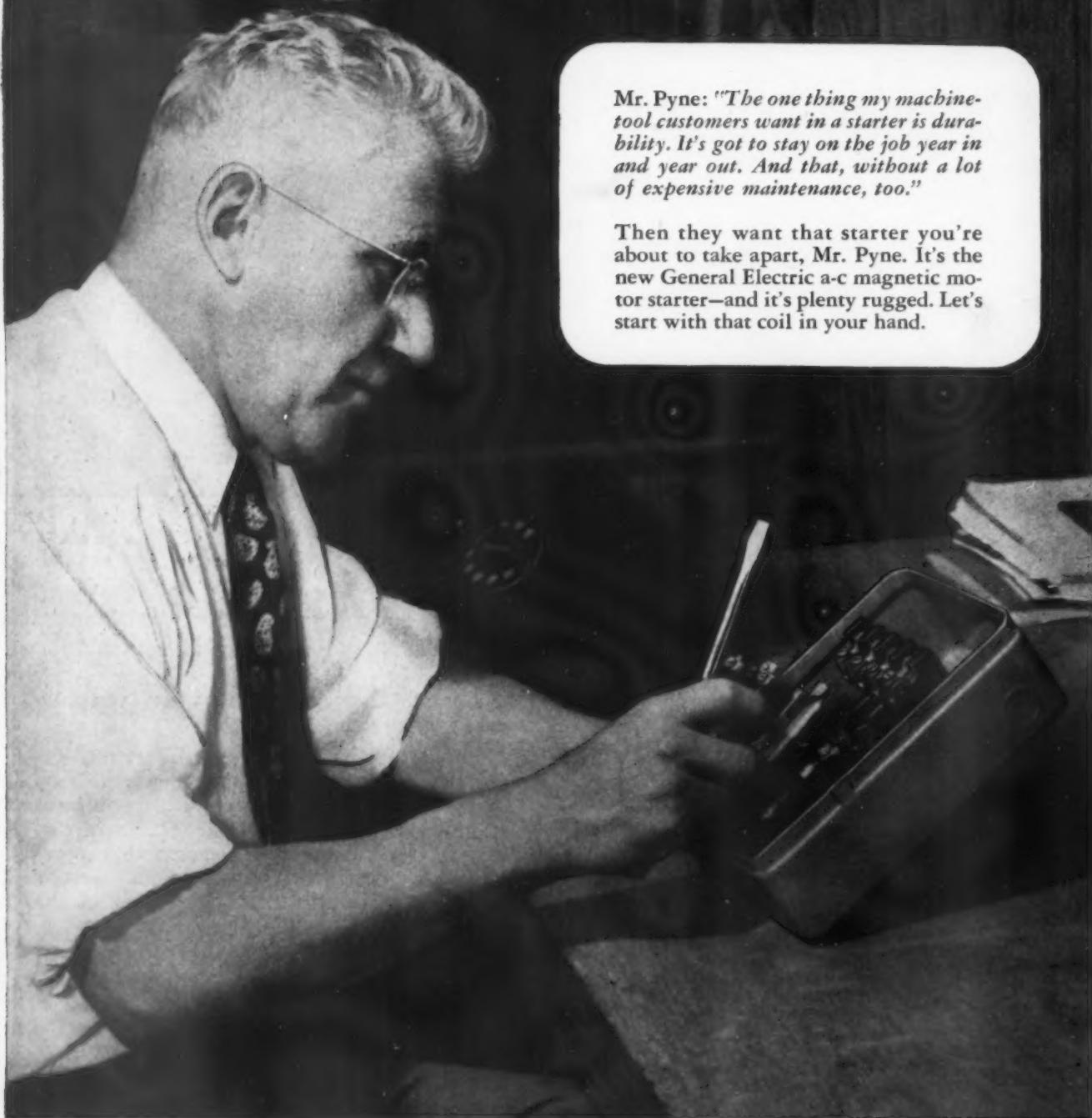


**MOTOR
STARTERS**



5 reasons why

R. S. PYNE, THE VAN NORMAN COMPANY,



Mr. Pyne: "The one thing my machine-tool customers want in a starter is durability. It's got to stay on the job year in and year out. And that, without a lot of expensive maintenance, too."

Then they want that starter you're about to take apart, Mr. Pyne. It's the new General Electric a-c magnetic motor starter—and it's plenty rugged. Let's start with that coil in your hand.

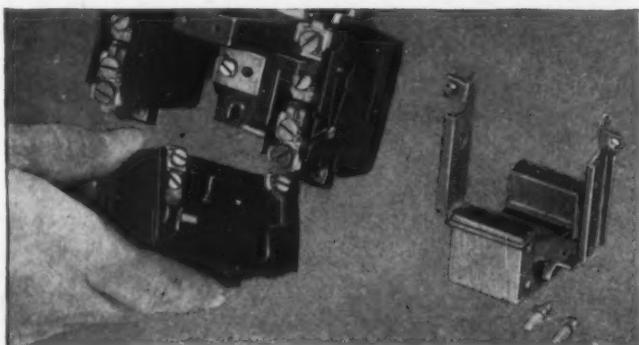
GENERAL ELECTRIC



730-11

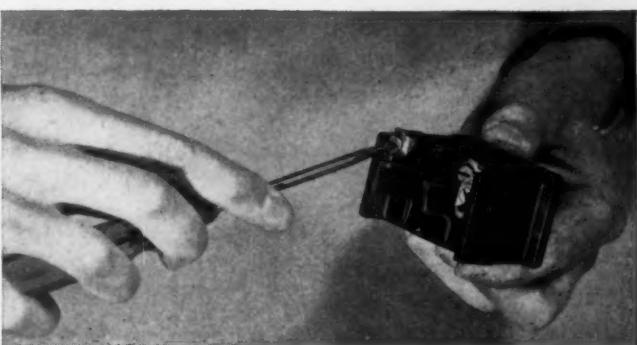
G-E starters last longer!

PROVES IT FOR HIMSELF WITH THE SCREWDRIVER TEST



Mr. Pyne: "Looks different. What's it got?"

1 That coil—we call it the "strong box" magnet coil—lasts two to five times longer than a conventional coil. Suppose the electrician's screwdriver slips and hits the coil. The windings can't be damaged because they're firmly locked in a block of molded plastic.



Mr. Pyne: "Will these terminals work loose?"

2 Not a chance! They're permanently anchored in the coil enclosure so they can't loosen, even after years of operation. You'll notice they're on the front of the coil, too. That makes for easier servicing.



Mr. Pyne: "This magnet moves smoothly enough."

3 Yes—and you can be sure it will do just that even after it's been in service for years. That's because the plastic coil block is made with a permanent "molded in" lubricant. No metal-to-metal friction, no bearings to wear!



Mr. Pyne: "Contacts that burn easily seem to be a major headache. How about these?"

4 Under average conditions you can count on these contact tips to stand up even on the toughest "start-stop" service. They're made of fine silver and there's little chance of their welding together thanks to a high initial tip pressure. And the arc hood keeps each tip protected in its own chamber.



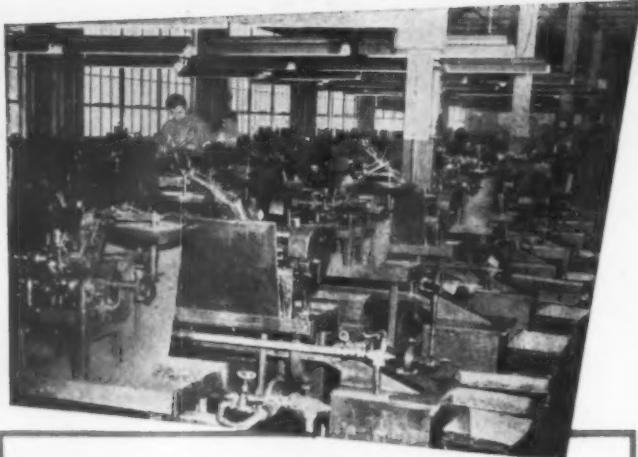
Mr. Pyne: "What about corrosion?"

5 No problem at all! All steel parts are zinc plated. The arc chutes are impregnated with a special wax to resist moisture absorption. Finally, the case is coated with a special corrosion-resisting material and painted an attractive gray.

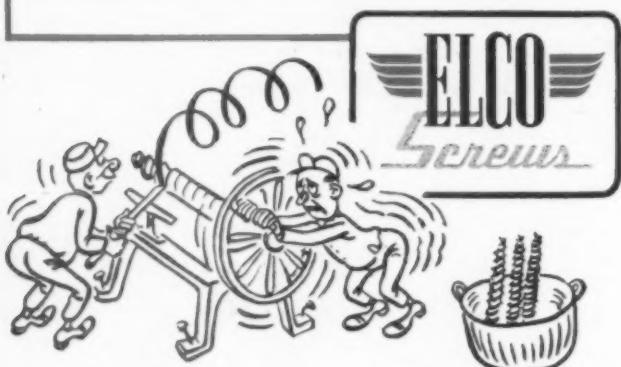
WHY DON'T YOU BUY ONE AND COMPARE



Make the screwdriver test yourself—and see why the new G-E magnetic motor starter lasts longer than any other you can buy. Your G-E representative or distributor salesman can supply you with this new starter from stock in NEMA sizes 0, 1, 2, and 3 for a-c motors up to 50 hp. For a complete description, write for the "tell all" bulletin, GEA-5153, Section 730-11, Apparatus Dept., General Electric Company, Schenectady 5, N.Y.



**ELCO CUT THREADING
PUTS QUALITY IN
"THE SCREWS YOU LIKE TO USE"**



Cut threading is the oldest — and, for certain purposes, still the best way to make screws. At ELCO, hundreds of cut threaders . . . each a small, specially-tooled automatic lathe . . . work through the day and much of the night. Each screw blank is threaded by a series of successively deeper cuts. Results — sharp and uniform points, smooth thread surfaces, sharp edges that cut cleanly for easier driving, easy set-up for special forms, and accurate control of significant dimensions. Our extra attention to quality assures you of receiving good screws — ELCO Screws.



**CLOSE-UP
TO THE POINT**

Carving out a 2 1/4-14 wood screw on an ELCO cut threader. This shows the fifth of seven cuts. Note the smooth thread, clean edge, and sharp point.



TOOL & SCREW CORPORATION
1912 BROADWAY, ROCKFORD, ILLINOIS



AND
*Special
Parts*

**JONES TO BE GUEST AT
CENTRAL MICHIGAN MEETING**

A regular meeting of the Purchasing Agents Association of Central Michigan will be held on September 19, at Lansing. Present plans call for designating the affair an Executive Night meeting. Guest of honor will be H. F. "Hack" Jones, recently elected president of the National Association of Purchasing Agents.

New members of the association include: Lynn A. Kosht, Lansing Public Schools; Donald J. Darken, Distel Heating Company, Lansing; and Boyd A. Rainey, Farm Bureau Services, Inc., Lansing.



**WASHINGTON ASSOCIATION
HAS ANNUAL GOLF TOURNEY**

The annual golf tourney of the Purchasing Agents Association of Washington was held at the Rainier Golf & Country Club on Thursday, August 10. Among the prizes awarded were those for the best golf, the worst golf, for closest to pin, for longest drive, and for closest to handicap. Dinner for golfers and non-golfers was served in the Rainier clubhouse in the evening. Assisting on the committee were George K. Clark; W. B. Donaldson, N. A. Gilbertson, C. B. Harrison, William B. Ihlandfeldt, J. M. Lamb, T. B. Mitchell, Harold E. Roslund and Harold L. Wanzer.

The 29th annual picnic for association members and their families was held on July 22 at Gaffney's Lake Wilderness Resort, near Maple Valley, Wash. A full program of games, races and contests for persons of all ages was held all afternoon. A picnic dinner was served in the early evening, followed by awarding of prizes. Allan Fox, Puget Sound Power & Light Company, was chairman of the committee in charge.



**TULSA ASSOCIATION VISITS
BRADEN WINCH CO. PLANT**

Members of the Purchasing Agents of Tulsa and their department associates visited the plant of Braden Winch Company, Broken Arrow, Okla., on July 18. Tom Schuetz and his associates in the Braden Company provided a buffet supper for the visitors following their tour of the plant.

Among the coming events scheduled for the Tulsa association are the 17th annual Baker Oil Tools reception and dinner on September 12, and the formal opening of fall activities on September 26 with an open meeting for purchasing and sales. Speaker at that meeting will be Fred Sharpe, University of Kansas Extension lecturer. Mr. Sharpe's subject will be "You Sell While You Purchase". Association members have also begun to get details on the 4th annual Southwest Purchasing Conference of Association in District 2, to be held at the Hotel Texas, Fort Worth, on October 4 and 5.

(Please turn to page 196)

34 DIE CAST APPLICATIONS



The Die Cast Applications listed here are located in adjoining office

APPLICATION OF DIE CASTINGS IN MODERN OFFICE EQUIPMENT

- | | | |
|-----------------------|-------------------------|-----------------------------|
| 1. Pencil Sharpener | 12. Copy Viewer | 24. Adding Machine |
| 2. Electric Fan | 13. Venetian Blind | 25. Addressograph |
| 3. Fire Extinguisher | 14. Executone | 26. I.B.M. Tabulator |
| 4. Change Maker | 15. Stapler | 27. Door Check |
| 5. Checkwriter | 16. Envelope Opener | 28. I.B.M. Punch |
| 6. Gum Tape Machine | 17. Office Chair | 29. I.B.M. Sorter |
| 7. Postage Meter | 18. Wire Recorder | 30. Multigraph |
| 8. Envelope Sealer | 19. Lighting Fixture | 31. Safe Hardware |
| 9. Hand Letter Opener | 20. Duplicator | 32. Cup Dispenser |
| 10. Telephone (Base) | 21. Paper Perforator | 33. Water Cooler |
| 11. Typewriter | 22. Calculating Machine | 34. Filing Cabinet (Handle) |
| | 23. Dictating Machine | |

...and more to come

Many of the die cast applications in the modern office are the results of pioneering by Doehler-Jarvis research. Many more are in the making. That's because the Doehler-Jarvis die-casting process is the shortest route between raw materials and finished products.

We would welcome the opportunity of assisting in your development work.



DOEHLER-JARVIS CORPORATION

The World's Largest Producer and Finisher of Die Castings

PLANTS AT: TOLEDO, OHIO • POTTSSTOWN, PA. • BATAVIA, N. Y. • GRAND RAPIDS, MICH. • CHICAGO, ILL.

EXECUTIVE OFFICES: 386 FOURTH AVENUE, NEW YORK 16, N. Y.

NOW New Streamlined RIDGID 65R Die Stock that WON'T JAM



while threading with power drive or by hand

New **JAM-PROOF** drive plate automatically kicks out driving ratchet pawl when standard length thread is cut.... You don't have to watch it—lead screw can't jam on workholder.



Right Here is the simple foolproof mechanism that makes 65R automatically **JAM-PROOF**.

You can convert your present 65R to new **JAM-PROOF** type—buy new drive plate, put in place of old plate.

All other **RIDGID** 65R features remain the same

Perfect threads on 1" to 2" pipe with 1 set of high-speed steel dies—sets to pipe size in 10 seconds—mistake-proof self-centering workholder sets instantly—and now it's **JAM-PROOF**.

Buy new **JAM-PROOF** **RIDGID** 65R at your supply house

RIDGID
WORK-SAVER PIPE TOOLS

THE RIDGE TOOL CO. • ELYRIA, OHIO

TOLEDO ASSOCIATION HOLDS ANNUAL GOLF PARTY

The annual golf party of the Purchasing Agents Association of Toledo was held on Thursday, July 20 at Highland Meadows Country Club. A steak dinner was served in the evening to more than 200 guests.

Low gross for association members was again won by Mel H. Schneider, secretary. A large number of players came in on blind par and after drawing lots the prize was won by Richard Hardgrove, president-elect of the association.

The following were among some of the out-of-town guests: Bill Lawrence, Ohio Nut & Bolt Co., Berea, Ohio; A. G. C. Quay, Moltrup Steel Products Co., Cleveland, Ohio; Paul Keller, Ohio Stainless & Commercial Steel Co., Cleveland, Ohio; Bill Schmidt, Ohio Stainless & Commercial Steel Co., Cleveland, Ohio; E. J. Heffner, U. S. Steel Supply Co., Cleveland, Ohio; "Moon" Mullens, Cleveland, Ohio; John Margin, Ohio Body Mfg. Co., New London, Ohio; Roger Peckinpaugh, Oliver Iron & Steel Co., Pittsburgh, Pa.; W. H. Taylor, Peters Stamping Co., Perrysburg, Ohio; Lee J. Haines, Dodge Mfg. Corp., Mishawaka, Ind.; C. C. Campbell, Jos. T. Ryerson & Son Co., Detroit, Mich.; Hugh Hurst, Jos. T. Ryerson & Son Co., Detroit, Mich.; Nate Wade, Ohio Stainless & Commercial Steel Co., Detroit, Mich.; Dell Nabb, Sharon Steel Prod., Detroit, Mich.; Frank McLain, Sharon Steel Prod., Detroit, Mich.; Wilbur Stull, Socony-Vacuum Oil Co., Fremont, Ohio; A. B. McTelve, M & S Mfg. Co., Hudson, Mich.; Gordon G. Greitzer, Mid-West Purchasing Agent, Cleveland, Ohio.



BUFFALO ASSN. GOLF PARTY

The annual golf party of the Purchasing Agents Association of Buffalo was held on Tuesday, July 18, at the Wanakah Country Club, Wanakah, N. Y. Dinner was held in the clubhouse following golf. Harry D. Grow was chairman of the affair, assisted by Elson Holrod and J. C. Pfisterer.



CHATTANOOGA ASSOCIATION TAKES BOAT RIDE

The regular monthly meeting of the Purchasing Agents Association of Chattanooga was held Tuesday evening, July 11, in the form of a boat ride aboard the "Lake Queen". Box picnic suppers were served, and numerous prizes were awarded to the ladies attending.



CENTRAL N. Y. CLAMBAKE

The annual outing and clambake of the Purchasing Agents Association of Syracuse and Central New York was held on Thursday afternoon and evening, July 13, at Hinerwadel's Grove, North Syracuse.

(Please turn to page 200)

These Features Save You Money	For These Reasons	It's a Worthington—
1 Two-piece QD sheave—rim and hub separate	Mount light hub first, then slide heavier rim on tapered hub	EXCLUSIVE
2 Choice of one or two-piece assembly	Mount hub and rim separately, or loosely assemble hub on rim and slide on shaft together	EXCLUSIVE
3 Split hub	Easy to mount, even on oversized shaft	ORIGINAL
4 Clamp screw in hub	Holds hub in position on shaft while setting or removing rim	EXCLUSIVE
5 Taper-mated hub and rim	Mount easily in any position—no keyway between taper surfaces	ORIGINAL
6 Large, long pull-up bolts	Hold better and more uniformly	EXCLUSIVE
7 Friction cone grip	Tightening rim on hub gives positive press fit on shaft	ORIGINAL
8 Shaft key lock (set screw over keyway)	Prevents key from drifting	EXCLUSIVE
9 Quickly-detachable (QD)	Pull-up bolts used as jack screws to remove sheave rim	ORIGINAL
10 Interchangeable rims	Hubs for every bore—lower inventory cost	ORIGINAL
11 No realignment problem	Clamped hub holds shaft position—new rim tightens up in exact alignment	EXCLUSIVE
12 Choice of "A", "B", "C" and "D" grooves	"Tailor-made" grooves give proper belt "ride-out" for maximum life efficiency	ORIGINAL
13 I-beam spokes on driven sheave	Stronger—capable of carrying heavier load with less weight	EXCLUSIVE
14 Offset design of sheave	Reduces over-hang loads—increases bearing life	ORIGINAL
15 Worthington-Goodyear V-belts	Load-carrying cords in neutral axis reduce internal friction—each belt carries its share of drive load	ORIGINAL

WORTHINGTON



ORIGINATORS OF THE QD SHEAVE
WORTHINGTON PUMP AND MACHINERY CORPORATION
MULTI-V-DRIVE SALES DIVISION

Buffalo, N. Y. • General Offices, Harrison, New Jersey
POWER TRANSMISSION: sheaves, V-belts, variable speed drives
PUMPS: centrifugal, power, rotary, steam
AIR COMPRESSORS: water-cooled, air-cooled

The Good
Right Hand
of
Industry

Worthington Pump and Machinery Corporation
Multi-V-Drive Sales Division, Dept. PO-1
Buffalo, N. Y.

Send latest bulletin of Worthington Multi-V-Drives.

NAME.....

COMPANY.....

ADDRESS.....

CITY..... ZONE..... STATE.....

How Does Your Drive Rate on the V-drive Scoreboard?

Here are 15 money-saving features of the most efficient V-belt drive. Only Worthington Multi-V-Drives give you all 15!



EASY TO GET ON



EASY TO GET OFF



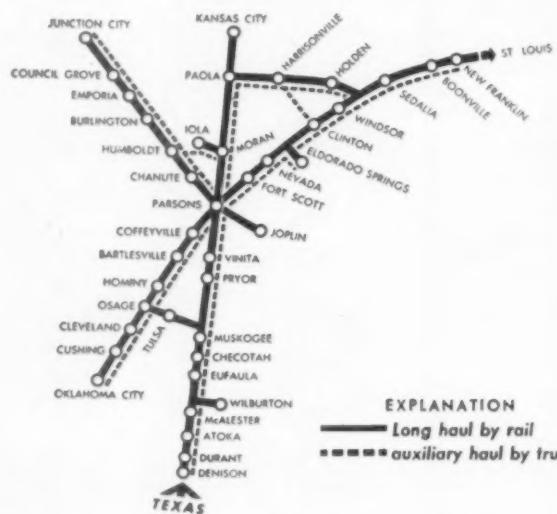
YET
ALWAYS TIGHT
ON THE SHAFT

WORTHINGTON QD SHEAVE —ORIGINAL TAPERED CONE-GRIP SHEAVE

Complete Range of Stock Sizes — Prompt Shipment. 853 listed stock sizes in "A", "B", "C" and "D" sections, fhp to 600 hp . . . 332 listed stock sizes of EC Cord V-belts. Send coupon for latest Worthington QD Sheave bulletin.

Speed Your Shipments

WHATEVER THEIR SIZE



COORDINATED RAIL-TRUCK SERVICE

- Further extended and improved.
- Even more service.
- Even more convenience.
- To even more points via Katy's modernized train-truck service.
- Daily pick-up and delivery makes every town a terminal city.

Ask your Katy representative for complete details about new routes and new schedules. Use this time-saving, fast freight service.



1 PHONE YOUR NEAREST KATY REPRESENTATIVE — Just tell him what you have to ship, and where it's going.



4 FAST ROAD SCHEDULE — Fast freights like the famous Diesel-powered Katy Komet will speed your goods to destination.



THE **KATY**

N A T U R A L

USE KATY L.C.L. FREIGHT MERCHANDISE SERVICE

**via KATY KOMET
and other Katy Fast
Freights to and from
MISSOURI, KANSAS,
OKLAHOMA and TEXAS**

Here's the service that will move your shipments *where you want, when you want*, with a minimum of attention on your part.

Whatever your shipping needs, specify Katy's smoother, faster, safer service to expedite your L.C.L. merchandise freight.

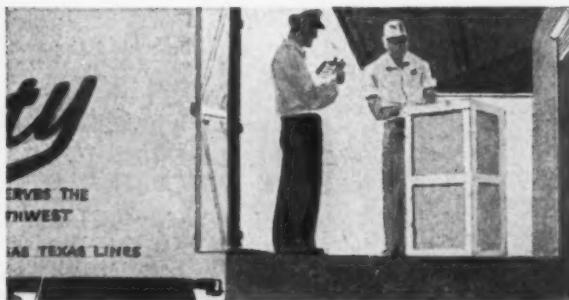
Your nearest Katy representative will be glad to give you complete details.



- 2 FREE PICK-UP AT YOUR DOOR** — Modern trucks will quickly transfer your goods to the freight terminal.



- 3 LOADED PROMPTLY** — Experienced handlers, using the latest equipment, will process your goods safely and efficiently.



- 5 FREE DELIVERY TO YOUR CUSTOMER'S DOOR** — All cars are worked at Katy freight houses the day of arrival.



- 6 ON TIME! FROM START TO FINISH** — For dependable, careful, time-saving service to and from the Southwest, mark it KATY L.C.L.

R O U T E S O U T H W E S T

Bendix-Skinner

ORIGINATOR OF **MICRONIC** FILTRATION

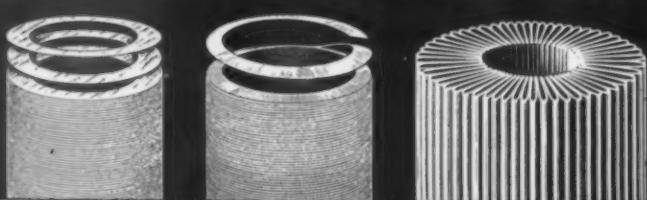
Results Prove It



Nine times out of ten **Bendix-Skinner** Filters will supply the "finest" answer to your filtration problems. Here are the facts: available with patented, exclusive, resin impregnated cellulose elements; simple, quick replacement; high flow rate with minimum pressure loss; no channeling or bypassing; over 350 models providing filtration from $\frac{1}{2}$ micron (.000019") upwards at flow rates from 1 to 5000 g.p.m. Why not let **Bendix-Skinner** filtration engineers work with you? Write us direct.



Model 3110-P filter element, $6\frac{1}{4}''$ x $3\frac{1}{2}''$, has a filtering area of 940 sq. in.!



SKINNER PURIFIERS DIVISION OF

1503 TROMBLY AVENUE, DETROIT 11, MICHIGAN

Export Sales: Bendix International Division, 72 Fifth Ave., N.Y. 11, N.Y.



MEMPHIS ASSOCIATION HAS ANNUAL SUMMER DANCE .

The annual summer dance of the Purchasing Agents Association of Memphis was held in the Catholic Club on Saturday, July 22. Bob Anderson's orchestra played for an estimated attendance of 300. Party chairmen were: J. W. Crawford, Sol O'Mell, Francis Brunner, and Joe Keifer.

IRON AND STEEL EXPOSITION CLEVELAND, SEPT. 26-29

A preview of plans for the 1950 Iron and Steel Exposition which is to be held in Cleveland Public Auditorium, September 26, 27, 28 and 29, indicates that the displays this year will turn up more ideas for the iron and steel industry than in any other year. Presenting a theme of "Engineered Efficiency in Steel Plant Improvement", this biennial exposition will, according to early information from the more than 150 exhibitors, bring some entirely new developments in products and processes to the attention of steel producers. Working models and actual production units will be used to a much greater extent than in any previous exposition.

The AISE technical program, also held in the Cleveland Public Auditorium in conjunction with the exposition, will include 43 technical papers. T. D. Jolly, vice president of the Aluminum Company of America, will speak on "Engineering and Purchases" at the September 28 afternoon session.

MILITARY PACKAGING REVIEW AT PACKAGING-MATERIALS HANDLING SHOW

A "Military Packaging Review" will be held in conjunction with the Fifth Annual Industrial Packaging and Materials Handling exposition in place of the previously announced Government packaging review, according to the Society of Industrial Packaging and Materials Handling Engineers, 20 W. Jackson Blvd., Chicago. The exposition will be held in Convention Hall, Philadelphia, October 10, 11, 12.

ASME FALL MEETING TO BE HELD IN WORCESTER, MASS.

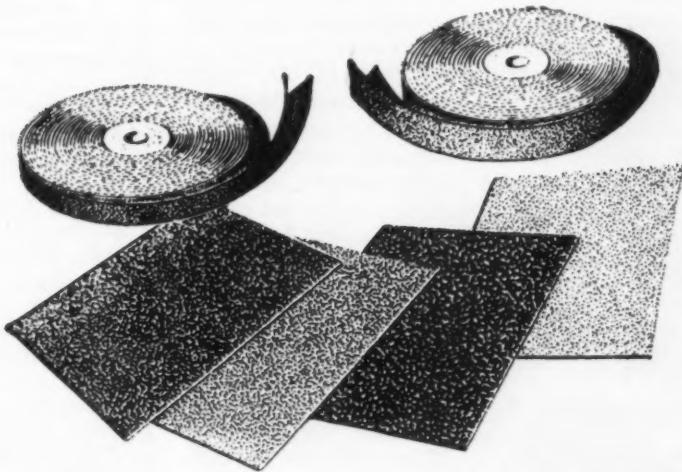
The American Society of Mechanical Engineers will hold its Fall Meeting in Worcester, Mass., September 19-21 at the Hotel Sheraton. Some 50 papers in such fields as heat transfer, management, rubber and plastics, textiles, power, machine design, safety, gas turbine power, fuels, hydraulics, materials handling, production engineering, metals engineering and wood industries are scheduled.

Inspection trips will be made to the following plants in Worcester: Worcester Pressed Steel Co., John Higgins Armory, Norton Co.—Abrasive & Machine Divn., Heald Machine Co., Crompton

(Please turn to page 202)



COATED PRODUCTS COMMENTS



Saving money on sanding

ALOXITE aluminum oxide products by CARBORUNDUM combine fast sharp cutting performance with rugged durability to save time and money on metal hand sanding operations. ALOXITE metal cloth sheets (9" x 11") are especially effective for hand sanding irregular surfaces. Where smaller size abrasive strips are required, material and time are saved by specifying and using ECONOMY rolls. The cost cutting effectiveness and endurance

of these products has earned a user-rating of as much as 25% better than other materials. This is due to aluminum oxide grain that is uniformly sharp and tough...to electrostatic application and a firm anchoring high grade glue bond...to a flexible light weight Jeans cloth backing. Get these advantages and more, by calling in your CARBORUNDUM representative. Coated Products Division, The Carborundum Company, Niagara Falls, N. Y.

COATED ABRASIVES BY **CARBORUNDUM**

TRADE MARK

Making ALL abrasive products...
to give you the proper ONE

"Carborundum", "Economy" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company



BUSINESS IN MOTION

To our Colleagues in American Business ..

Because Revere salesmen and Technical Advisors call upon companies in practically every industry, they acquire a rather amazing fund of knowledge about many widely different products and processes. When no trade secrets are involved, knowledge thus acquired from one company often can be transmitted to another, with mutual benefit. Take the problem Revere found in the condensers of an East Coast electric utility. Cooling water comes from the harbor, with the result that the tubes quickly become coated with algae and other marine organisms, reducing the vacuum and hence increasing fuel consumption.

The utility is exceptionally well managed, and has a systematic program of tube cleaning. However, it was found difficult to clean the tubes effectively. Brushes and rubber plugs, pushed through the tubes, wore out rapidly, so that the operation was inefficient and costly. Though the condenser tubes were not made by Revere, we took an interest in this. A Revere customer makes special nylon-bristled brushes just for cleaning tube and pipe in dairies. The Technical Advisor suggested trying a slight modification of these. Results: over 300 tubes well cleaned per brush, a much longer life than anything previously used; a half-inch gain in vacuum, meaning dollars and cents saved in fuel.

There was another problem here, arising from the fact that the brushes are propelled through the tubes by an air-water pressure gun, operating at about 75 pounds per square inch. See illustration. Under that pressure a brush comes out of the far end of the tube like a proj-

jectile from a gun. It has to be stopped by something strong enough to take the shock, but not hard enough to damage the brush. Canvas and plywood were tried, without satisfactory results as either target or brush was injured, or both. Revere suggested a target of foam rubber, and not only that, found a source of supply of rubber of the right consistency. This combination works perfectly, and is in part responsible for the record of 300 tubes cleaned per brush.

The average person would not think that an electric generating station would find good uses for nylon brushes, foam rubber, and plywood, but Revere through its contacts with many industries, was able to combine these three items into a practical solution to a particular problem. The electric company states that when next it buys condenser tubes,



Revere will get the order. That, however, is not the point of this advertisement. The significant thing is that here we have an example of a supplier, Revere, recommending products other than its own, and acting as an advisor without fee. In the course of our daily contacts we often note other suppliers of materials to industry doing much the same thing, so we claim no special virtue. The purpose of this advertisement is to use an example to point up our recommendation that no matter what you buy, no matter what you make, you take your suppliers into your confidence. You can benefit not only from their knowledge of their own industry and its products, but also acquire non-confidential information about other industries and products.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801



Executive Offices:

230 Park Avenue, New York 17, N. Y.

(Continued from page 200)

ton & Knowles Loom Works, Telechron Co., Reed Prentice Corp. Other plants to be visited include General Electric Co., Fitchburg; Bay State Abrasive Products Co., Westboro; Wyman-Gordon, North Grafton; General Motors Corp., Framingham; and Heywood-Wakefield Co., Gardner—all of Massachusetts.

COATING FOR SAFETY LENSES PROTECTS AGAINST SPATTER AND PITTING

A preparation for coating safety lenses to make them more resistant to welding splatter and emery pitting is now available to purchasers of Bausch & Lomb ophthalmic lenses.

The preparation, known as Tuf-Cote, has been made available through an arrangement effected by Bausch & Lomb and the Wallace Optical Company, Inc., of Detroit.

Tuf-Cote's effectiveness is derived from its resilience, which cushions the impact of particles striking against lens surfaces and keeps them free from pits and scratches resulting from these and similar causes for a substantially longer period than is the case with untreated lenses.

The process involves the patented application of a crystal-clear solution. Both surfaces may be treated if desired. The coating, produces no distortion, does not discolor or peel off, and permits the same degree of vision as is afforded by untreated lenses, thus preserving surface quality for much longer periods of time and contributing to economy and safety. Lenses can be recoated indefinitely so long as their surfaces are undamaged.

A prescription lens of any curvature, from plano lenses up to corrections of plus or minus 15 diopters, with the single exception of Ultex K, segment side—can be treated successfully. The process is applied largely to safety glasses but may be used in the coating of conventional dresswear lenses as well.

SEEKS PROGRAM FOR ELIMINATING WASTE IN SCRAP SALVAGE

In a letter to Secretary of Commerce Sawyer, John T. Kiley, executive vice president of the James Flett Organization, Inc., Chicago, industrial scrap specialists, charged that "we are wasting precious raw materials now just as we did prior to World War II."

"I am referring to many kinds of raw materials," he said, "but especially to metals—the metals to make arms for use in our efforts to protect the peace. Nobody knows when they may be needed to protect our homes. As you know, we do not have adequate stocks of some of the most essential alloying agents. Even our native stocks of copper, zinc, lead, and iron are limited." He declared that the metals form "the scrap residue of countless peacetime manufacturing processes".

(Please turn to page 204)

WICKWIRE ROPE

A PRODUCT OF

CF&I

Ask any user... you'll find them everywhere

In scores of industries, users of Wickwire Rope have developed an affectionate respect for its performance, safety and long life. And, for true economy, they use Wickwire's WISSCOLAY® Preformed. It lasts longer—is easier to cut, splice and install. It's kink-resistant and safer to handle. Wickwire Distributors and Rope Engineers, in key cities everywhere, are prepared to render prompt service in meeting your wire rope needs. Wickwire Rope Sales Office and Plant—Palmer, Mass.

IN THE EAST—Wickwire Spencer Steel Div. of C. F. & I.
500 Fifth Ave., New York 18, N. Y.

IN THE ROCKIES—The Colorado Fuel and Iron Corp.
Continental Oil Bldg., Denver, Colo.

ON THE WEST COAST—The California Wire Cloth Corp.
1080—19th Ave., Oakland 6, Cal.



TRANSPORTATION



LOGGING



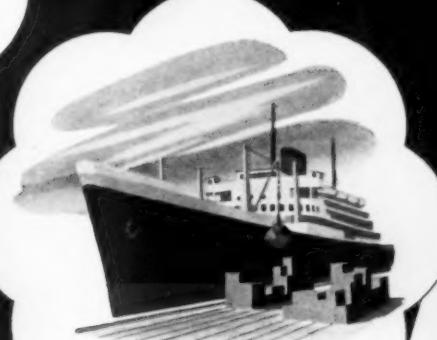
MINING



PETROLEUM



MANUFACTURING



MARINE



CONSTRUCTION

Federated first for SOLDERS...



...for QUALITY

Federated has the resources of a worldwide organization . . . raw materials are the best obtainable . . . alloying is done scientifically in modern plants under strict control of metallurgists. Core solders listed by Underwriters' Laboratories, Inc.

...for SERVICE

Practical field service engineers and skilled research scientists combine forces to solve any problem you have . . . with solder or any non-ferrous metal. All this service is yours for the asking.

...for VARIETY

Federated makes every commercial solder in any size or composition you want . . . acid wire, rosin core, solid wire . . . the exclusive CASTOMATIC bar solders . . . automotive body solders . . . pig, drop, foil, ingot, triangle, strip, wiping and segment solders.

One of Federated's 25 sales offices across the nation is near you. Speedy service on any non-ferrous metals request.

**Federated Metals
Division**

American Smelting and
Refining Company,
120 Broadway, New York 5, N.Y.



(Continued from page 202)
pointing out that because at the point where they are produced they are a waste product, they are deemed of little value and too often are handled and disposed of carelessly.

"Many manufacturers forget that it is the scrap materials of one plant that provide the raw materials of another" he wrote, quoting a WPB message to industry seven months after Pearl Harbor. He continued:

"In factory after factory little or no thought is being given to the proper segregation of scrap so that one kind will not contaminate another and thus reduce or destroy the value of both, and so that scarce alloying elements will not be lost. Some scrap is thrown away outright; some is even now disintegrating on company dumps. Too little of that part which is salvaged is properly prepared by the producers for re-use by mills and other consumers."

"This waste is not only a loss to the country but an economic loss of sometimes incredible size to the company which produces the scrap. No accurate figure is available of the value of the scrap wasted each year, but it runs high in the millions of dollars. At a time like this, the dollar value is the least part of the loss."

"We request that you, as Secretary of Commerce, institute an educational program throughout industry to conserve these vital scrap materials. We know that such a program can be successful through our own experience in introducing sound methods of segregation, preparation, and marketing into the operations of more than 700 firms."

"Most sincerely we ask that the program start now."

1 1 1

ASA ANNOUNCES AGREEMENT ON FOUR GRAYS AS STANDARD FINISHES

First unified efforts of industry to reduce the number of colors for industrial apparatus, machines, and equipment are beginning to bear fruit as a result of unanimous agreement on four accurately defined grays as standard finishes. American Standards Association, 70 E. 45th St., New York 17, N. Y. announces adoption of these standard grays following a consensus reached by 18 organizations and groups who represent all classes of manufacturers and users of such equipment.

General acceptance of this new standard on "Gray Finishes for Industrial Apparatus and Equipment" (ASA Z55.1-1950) by individual manufacturers and purchasers of industrial equipment and machines is expected to reduce considerably the cost of finishes and finishing. It will be of further value to purchasers of equipment by making it easier to specify and to match grays, and to produce color harmony of machines and other equipment purchased from different manufacturers. Color guides are expected to eliminate haphazard choice of shades from the limitless possible shade variations.

The value of this simplification is
(Please turn to page 208)

HODELL

IS THE NAME
FOR DEPENDABLE

CHAIN

Whatever your chain requirements, you can depend on the name "Hodell" for top quality and long life. A few of the many types of Hodell Chain are shown below. Hodell also manufactures many formed wire specialties and can make your chain assemblies to your specifications.



PROOF COIL
Trade sizes 3/16 and up



LIBERTY COIL
Twist or Straight Link. Sizes No. 6 to No. 7/0



LIBERTY MACHINE
Twist or Straight Link. Sizes No. 5 to No. 7/0



PASSING LINK
Sizes No. 2/0 to No. 4/0



BULLDOG COIL
Sizes No. 7 to No. 10/0



SAMSON COIL
Sizes No. 4 to No. 7/0



SINGLE JACK—STEEL OR BRASS
Sizes No. 24 to No. 5

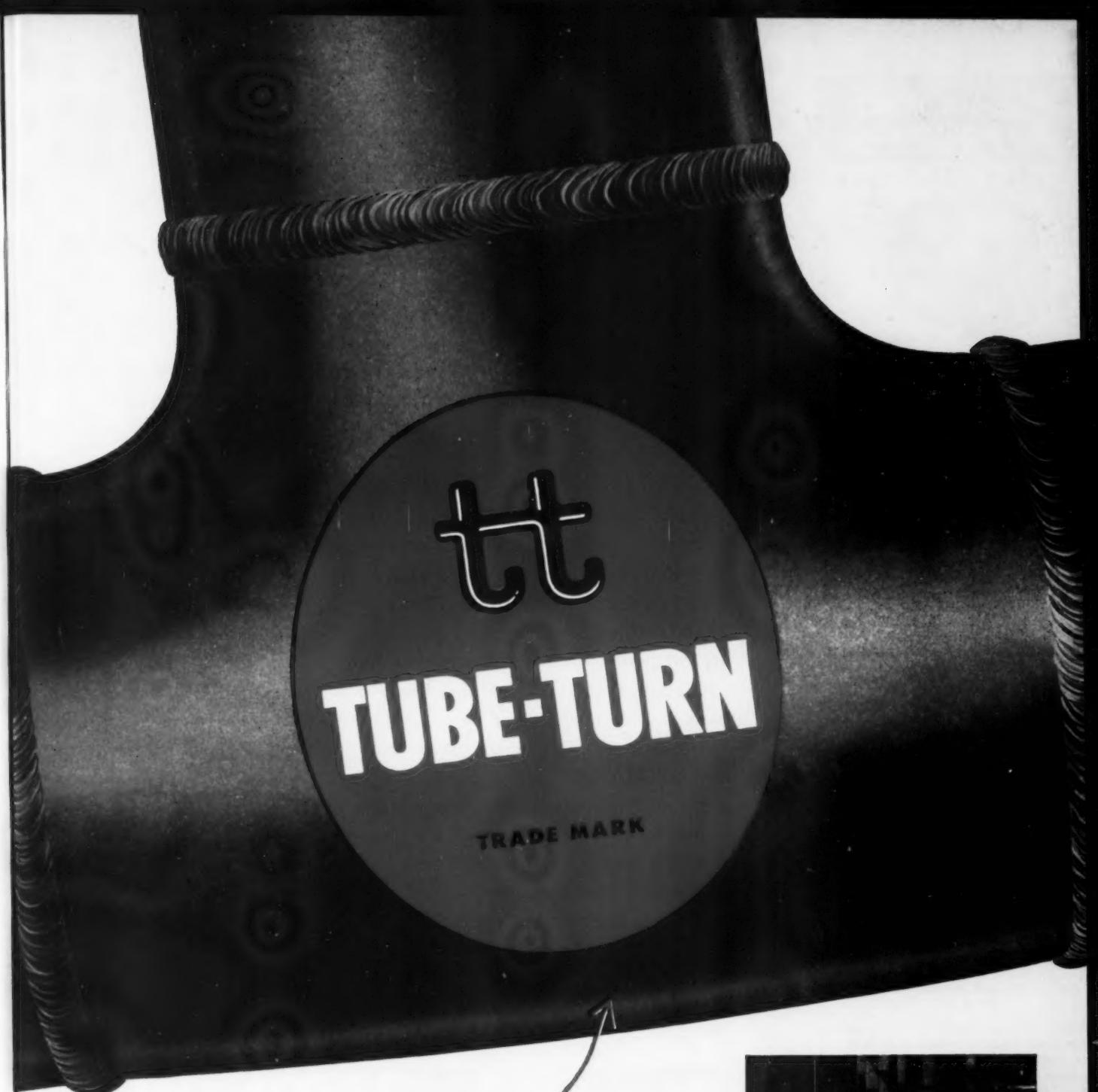


DOUBLE JACK—STEEL OR BRASS
Sizes No. 24 to No. 10

Send for Industrial Catalog...
giving full information on
the complete Hodell line.

HODELL CHAIN COMPANY

* CLEVELAND 3, OHIO *
ESTABLISHED 1886 — A division of THE NATIONAL SCREW & MFG. COMPANY



TUBE-TURN

TRADE MARK

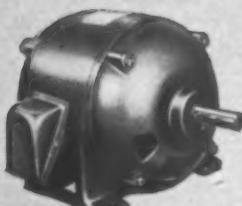
In all the world there's only
one TUBE-TURN Welding Fitting
as shown by this trade mark...
the right mark for every need
in welding fittings and flanges.

Your nearby TUBE-TURN distributor can serve
you right from stock.
Call him for prompt delivery.



TUBE TURNS, INC., LOUISVILLE 1, KENTUCKY DISTRIBUTORS IN ALL PRINCIPAL CITIES
DISTRICT OFFICES: NEW YORK • PHILADELPHIA • PITTSBURGH • CHICAGO • HOUSTON • TULSA • SAN FRANCISCO • LOS ANGELES
In Canada... Tube Turns of Canada Limited, Chatham, Ontario

FOR ALL TYPES
OF MOUNTINGS



SQUIRREL-CAGE PROTECTED-TYPE
Form BA
NEMA D Flange Mounting-Horizontal



SQUIRREL-CAGE PROTECTED-TYPE
Form BA
NEMA D Flange Mounting-Vertical

Widely used for machine tool applications, the NEMA Type D Flange Mounting is available horizontal or vertical with round frames or with feet. Either motor can also be furnished with B flange mounting, 40C rise continuous duty.



SQUIRREL-CAGE PROTECTED-TYPE
Form BA

NEMA C Face Mounting. Designed for close coupled pump duty and similar applications. Supplied for either horizontal or vertical operation. 40C rise continuous duty.



SQUIRREL-CAGE SPLASH PROOF
Form BA

Corrosion-resistant covers prevent splashing liquids from reaching the inside of the motor. 50C rise continuous duty.

THE NEW C-W
BRAKE MOTOR

for Protected-type drives

CROCKER - WHEELER
PROTECTED
POLYPHASE MOTORS

Since 1888

FIRST CHOICE FOR DOLLAR-SAVING DESIGN

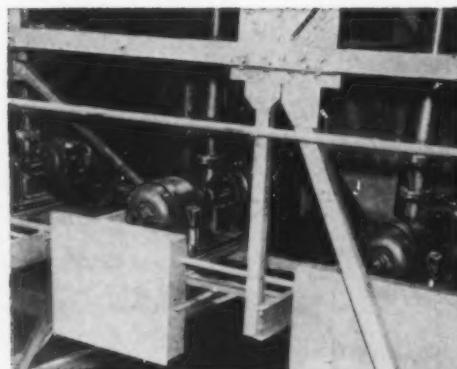
For over half a century, C-W Motors have been dependable "work-horses" of industry — powering many of the first machines converted to electric drives.

Today's C-W Protected-Type Motors are designed to maintain this "head start" in motor engineering. That's why they are first choice of so many manufacturers for drives that must operate at top efficiency day in and day out, without downtime for frequent maintenance and repairs.

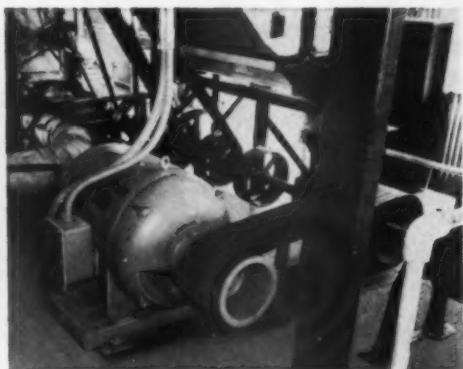
Smooth, rugged, streamlined frames fully protect windings against dripping liquids and falling chips. Prelubricated, double-row-width sealed bearings need no attention for at least five years. All designs conform to latest NEMA standards.

For machine tools, pumps, compressors, stokers, presses, blowers, crushers, — for any installation calling for a protected-type motor, — specify Crocker-Wheeler, and compare performance. See for yourself how time-proved "know-how" pays off, in dependable, trouble-free drives.

Bulletin SL-300-1A gives complete details of the complete line of C-W Protected-type Motors, in NEMA frames 203-505 inclusive, and in ratings above NEMA frames. Get your copy, — fill out and mail the coupon.



Driving pumps for waterfall on electric sign

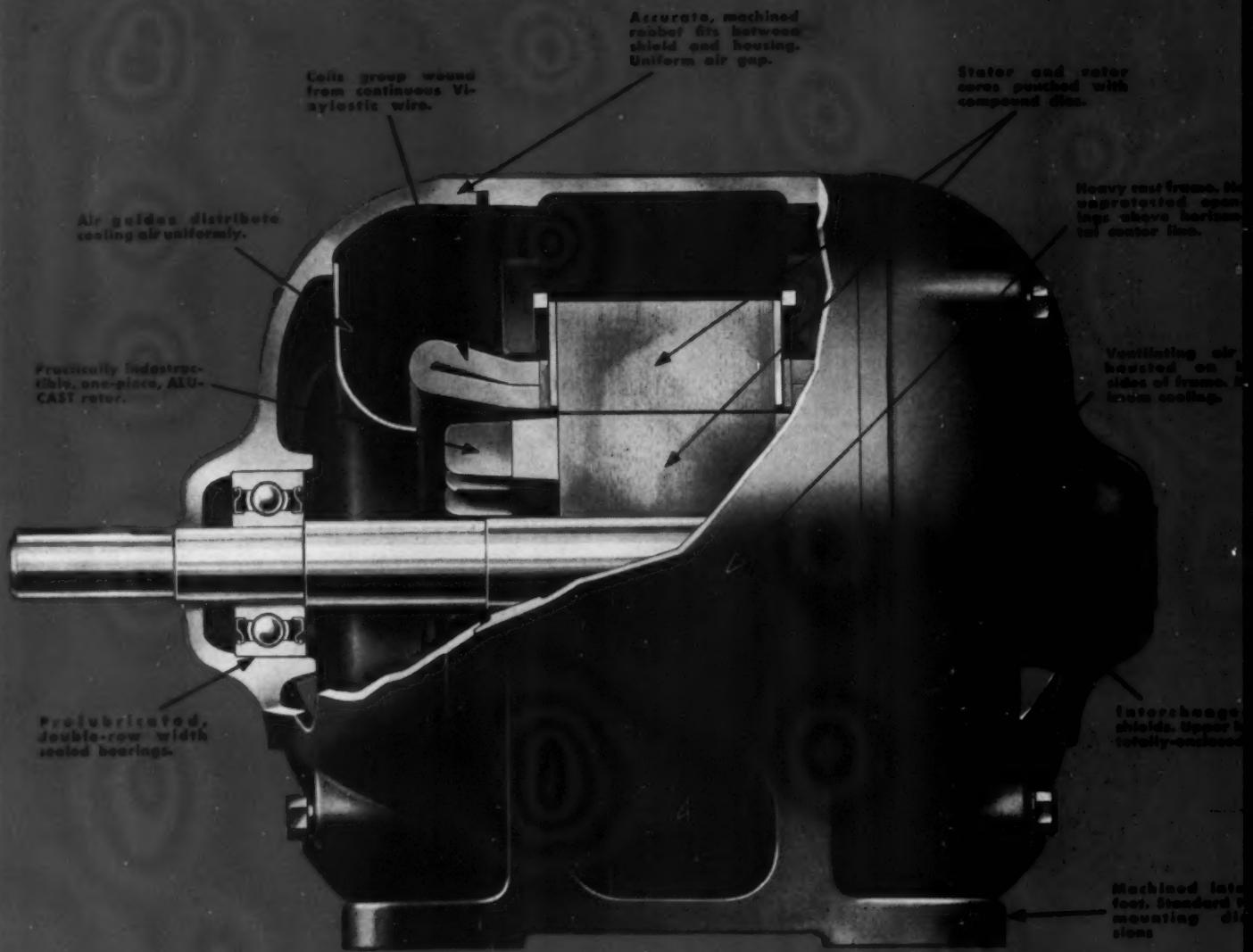


Driving cotton gin



The Crocker-Wheeler Brake can be mounted on appropriate NEMA D flange or C face motor with suitable double shaft extension. Simple, wrap-around cover on Brake gives totally-enclosed protection. The resulting Brake Motor is exceptionally compact for mounting in limited space. The bonded metal brake linings, the torque elements close to mounting flange, the large diameter spline with many teeth, and other exclusive features make the C-W Brake unequalled for dependability in any services requiring instantaneous stopping and starting.

— TYPE



ELLIOTT COMPANY CROCKER-WHEELER DIVISION,

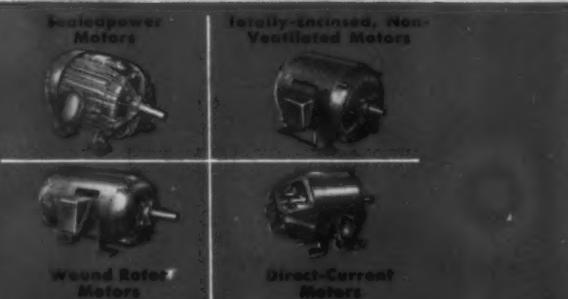
Branch Offices: Atlanta, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Houston, Kansas City, Los Angeles, Milwaukee, Minneapolis, New Orleans, New York, Newark, Philadelphia, Pittsburgh, St. Louis, Salt Lake City, San Francisco, Seattle, Tulsa, Washington, Wilmington. Representatives in principal cities.

Elliott motors and generators larger than the Crocker-Wheeler line are built by the Ridgway Division at Ridgway, Pa.

CW-10



AMPERE,
N. J.



Elliott Company, Advertising Dept., Jeannette, Pa.

Please send Bulletin SL-300-1A, describing full line of C-W Form BA Protected-type Motors.

Name _____

Title or Function _____

Company _____

Address _____

"THINK 7 TIMES BEFORE YOU PICK CHEAPEST WAY TO SHIP!"

"Cheapest way to ship" means more than rates alone. Before my customers pick their cheapest way, they think of these 7 features . . .



It's knowing the importance of these 7 things — and getting them — that makes my customers pick REA as their "Cheapest Way To Ship."

says Jim Cole, San Francisco
13 years an Express Man

ALWAYS ASK
.....
THE EXPRESS MAN!



(Continued from page 204)

shown by the experience of several manufacturers of electrical equipment who have had to stock more than 100 different shades of gray to satisfy customers. One manufacturer reported using 60 shades on a single type of equipment. Manufacturers of paint and finishing materials may also be able to economize in production and lowered inventories through application of the standard.

Many companies have been waiting only for the issue of the standard before adopting these standard grays. Others have been using the new grays even before the final stamp of approval by American Standards Association.

Each of the four grays may be specified by a name or a number given below. The numbers indicate the approximate degree of lightness and darkness of grays. Munsell notation for hue, value and chroma accurately identifies each color.

Name	Number	Munsell Notation
Light Gray	#61 Gray	8.3G6.10/0.54
Medium Light Gray*	#49 Gray	10BG4.90/0.60
Medium Dark Gray	#33 Gray	7.8B3.30/0.94
Dark Gray	#24 Gray	10B2.40/1.18

*Closely approximates Machine Tool Gray (7B), a standard of the National Machine Tool Builders' Association.

Contrary to the popular conception of grays, they are not necessarily variations in proportions of black and white. They may be light or dark colors with low or weak chroma (less than 1.5). Actually Light Gray is a green, Medium Gray is a blue green, and Medium Dark and Dark Grays are blues under the more discerning "eye" of a spectrophotometer.

Color chips of the standard grays are also available from ASA for use as masters for inspection by a visual comparison method appended to the standard. Use of color chips as secondary standards requires certain precautions because of possible deviation from the true standard. This may be caused by fading under strong light, accumulation of dust, dirt or grime on the surface when left uncovered, or by chemical changes of pigments or papers on which colors are applied.

The new American Standard gives limits of accuracy within which the colors of secondary standards should be held. Because of possible changes with age, color chips should be checked at regular intervals and replaced if necessary.

1 1 1

MAINTENANCE AIDS AVAILABLE WITHOUT COST

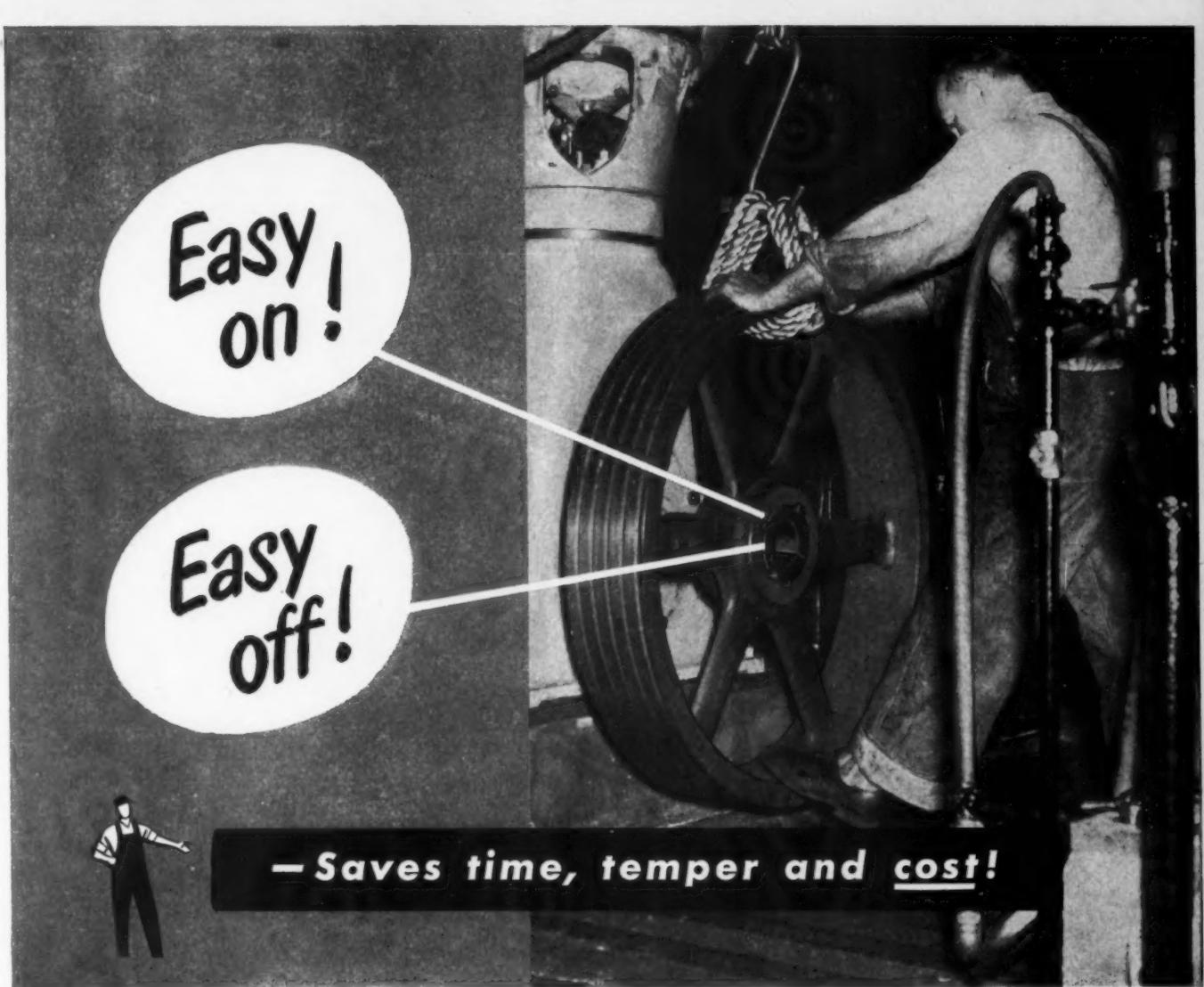
The following maintenance aids are available without cost from the National Sanitary Supply Association, Inc., 139 No. Clark St., Chicago, or any of its members:

Twelve-page booklet picturing expert methods of reducing sweeping and window washing time.

Twenty-page booklet picturing methods of setting up a money and time saving floor maintenance program.

A 16 mm., 22 minute, color and sound film covering completely "The Cleaning and Maintenance of Soft Floors."

(Please turn to page 210)



THE prominent compressor manufacturer in whose plant this picture was taken saves time and cost on his assembly line by using TAPER-LOCK Sheaves.

To mount TAPER-LOCK just slip it on the shaft, line it up and tighten the screws while sighting. It's in place to stay on the first try. And—it comes off just as easily as it goes on—tomorrow or years later! No machined surfaces are exposed to corrosion.

You, too, may profit by using TAPER-LOCK on your product—and on the production machinery in your plant. TAPER-LOCK Sheaves run true—they grip the shaft with firmness equal to a shrunk-on fit. Closer mountings are possible because there are no flanges or collars.

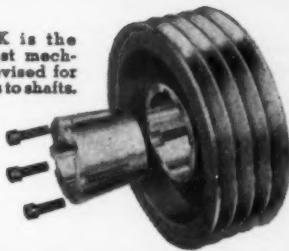
Ask your Dodge distributor about TAPER-LOCK V-Belt Drives, Dodge Bearings, Clutches, Couplings—and the new Dodge Torque-Arm Speed Reducer.
DODGE MANUFACTURING CORPORATION, 1300 Union St., Mishawaka, Ind.

CALL A TRANSMISSIONEER

He's factory-trained to help solve your power-drive problems. Look for his name under "Power Transmission Equipment" in your classified telephone directory.



TAPER-LOCK is the simplest, surest mechanism ever devised for holding wheels to shafts.



TAPER-LOCK sheaves are stocked in a complete range of sizes in Dual Duty (A & B); B, C and D grooves.

TAPER-LOCK BRAND

V-BELT SHEAVE

DODGE

of Mishawaka, Ind.

FIRST IN POWER TRANSMISSION MACHINERY

NAME PLATE

FOR YOUR NAME PLATE REQUIREMENTS, WRITE OUR SUBSIDIARY,
ETCHING COMPANY OF AMERICA, 1520 MONTANA STREET, CHICAGO 14, ILLINOIS

OOPS - your Slip is showing

NUMBER 2 OF A SERIES

In every day living, Spoonerisms, tongue-twisters, lip-slips, pen-puns . . . or call them what you will . . . seem to occur all too frequently. One can naturally attribute such misstatements to the complexities of the English language. Gabbing and pen-pushing in English is indeed a problem. Take for example these tid-bits from some of our most "correct" newspapers . . . "Whether the millionaires were most interested in stocks or blondes, he declined to say" . . . And here's a nice way to spend a lonesome evening, "COPS PINCH NUDES AT STAG PARTY." Another equally as entertaining: ". . . seldom has there been so splendid a display of beaux and bellies."

* * *



One of Dr. Spooner's prize slips, which, incidentally, almost cost him a slight tar-and-feather-job, goes something like this: "I am tired of addressing 'beery wenches,' and shall leave immediately by the 'town drain.'" . . . Then there was the gentleman, who upon entering the house, muddy from a rainy, wintry day, misunderstood the angry request: "Hush that brat; it's roaring with pain outside!" We should all like this one: A servant was instructed to "Take the flea off my cat and heave it at the louse of my mother-in-law!"

* * *

And, let us not forget radio . . . here they really pull some peachy ones. While drooling the miraculous merits of a certain massaging cream, the announcer's voice mellowed and sighed, "Ah, yes, milady you too can be 'abreast' of the times. . . ." . . . A prominent comedian, ribbing his female guest star about her scanty evening dress, apologized, "Pardon, dear, but your hip is showing."

* * *



And finally the clincher. A Hollywood star, being interviewed by a fashion editor, was tabbed with this one. She proudly remarked, "I think women's clothes are very interesting. I've been successful with them, on and off, for ten years!"

* * *

Now to get to the meat of the thing! Of course, we can't do much about the slips above except perhaps offer our pity! However, if you have "slip" trouble underfoot, we are "Johnny-on-the-spot" so to speak! Diversey Quik-Sil and Aqua-Lic, oil, grease and water absorbents, are terrific anti-slip products. They give you safety-assured, performance-proved, low-cost protection against slippery floors . . . give you easier-to-clean, safer floors, greater economy, day in and day out!

WANT PROOF? **WANT A SAMPLE?** **WRITE TODAY!**

THE DIVERSEY CORPORATION

Maintenance Products Department

1820 Rescoe Street • Chicago 13, Ill.

In Canada: The Diversey Corporation (Canada) Ltd.
100 Adelaide Street West, Toronto, Ontario

NEW BULLETINS ON ENGINEERING PROPERTIES OF NICKEL ALLOYS

Two new technical bulletins on the properties of high nickel alloys have been issued by The International Nickel Company, Inc. Both are twenty-four pages in length and contain charts, tables on compositions and properties, working instructions, and other information of a technical nature.

While each of the bulletins represents, to some extent, revisions of earlier bulletins on the same subjects, the revisions have been so complete and the new data contained so extensive that they are essentially new presentations.

Technical Bulletin T-7, one of the two, is entitled, "Engineering Properties of Inconel". In addition to information on Inconel, it contains material on Inconel "X", one of the newer age-hardenable Inco nickel alloys.

The second publication is Technical Bulletin T-9 and deals with the engineering properties of "K" Monel and "KR" Monel. Both are available without charge through the Technical Editor of The International Nickel Company, Inc., 67 Wall Street, New York 5, New York.

* * *

G. E. DEVELOPING SPECIAL SILICONE RUBBER COMPOUNDS

New silicone rubber compounds for special applications are being developed by the General Electric Company's Chemical Department, Pittsfield, Mass.

Two new low durometer compounds, known as G-E #13011 and G-E #13012 are for use in extreme temperature applications for shock mounts, light spring-loaded gaskets, damping devices, and myriads of related uses where conventional or silicone sponged rubber parts either deteriorate or take compression "set" and collapse.

Another general purpose silicone rubber compound, known as G-F #13013, is of particular interest to specialty fabricators. It has uniformly good general properties and is excellent to mold and extrude in fabrication of parts.

A red-colored, medium (50) durometer stock, it exhibits excellent flow and fine parting lines in molding and has equally good flow in extrusion work.

* * *

MECHANIZE PARCEL POST WINDOW SERVICE IN MORE CITIES AND TOWNS

U. S. parcel post window service will soon be mechanized in 24 more cities and towns where post offices will replace stamps with postage meters. The installations are part of a new contract for 300 special postage meters which the Post Office Department has awarded Pitney-Bowes, Inc., Stamford, Conn. The machines will be installed in some 100 cities and towns, 24 of them getting the service for the first time. Last year metered mail revenues to the Post Office Department were \$500,000,000—36% of all postage paid on U. S. mail.

(Please turn to page 212)

Is Stainless Steel Pipe on your shopping list?

We make it—in a wide range of analyses—
and in all commercial sizes

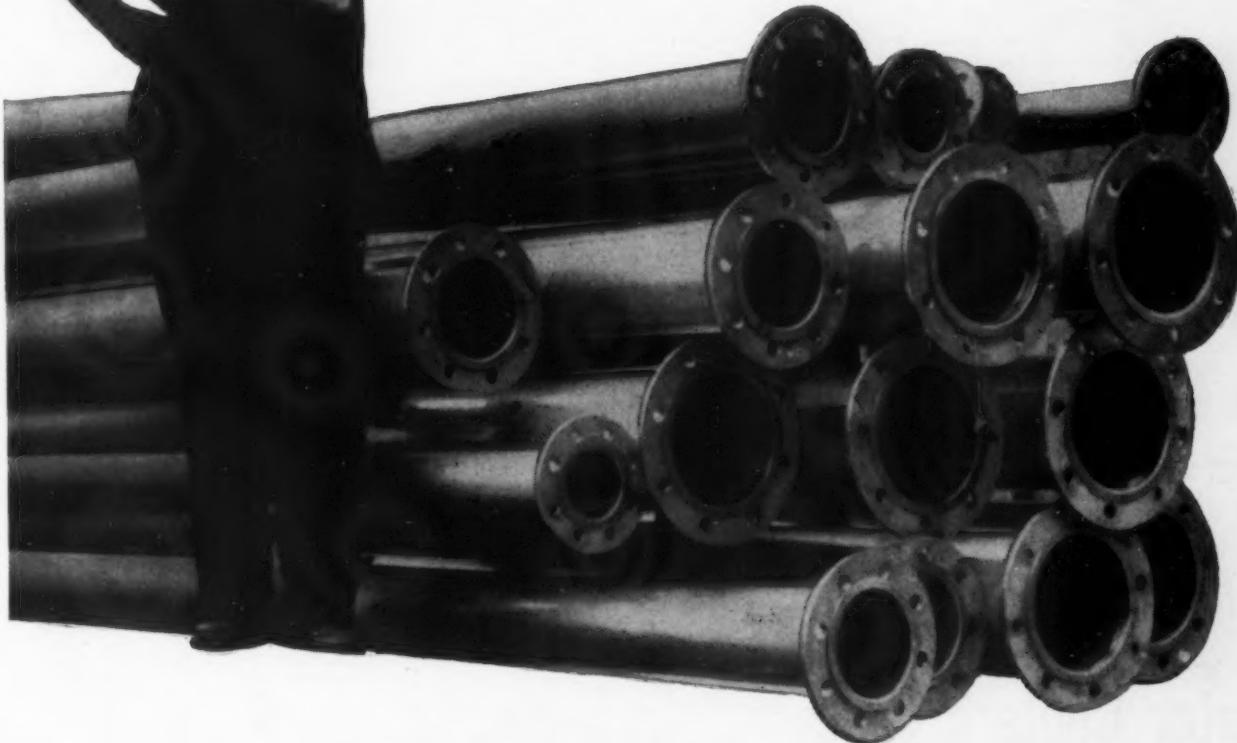


WHEN you need Stainless Steel pipe or tubes, come to stainless headquarters where practically any requirement for Stainless Steel pipe and tubes can be met in *seamless*—"Walls Without Welds."

Because National Tube Company is the world's largest producer of steel tubular products, and has been in the business of producing pipe and tubing of all kinds for all purposes for more than 60 years, an unequalled

wealth of experience is available to help you with any problem involving the use of Stainless Steel in tubular form.

If your applications must face unusually severe conditions—or even if they appear quite simple—find out today how to keep pipe and tubing costs down, how to attain top efficiency in performance, how to lengthen life between replacements with U·S·S Stainless.



AMERICAN STEEL & WIRE COMPANY, CLEVELAND • CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH

COLUMBIA STEEL COMPANY, SAN FRANCISCO • NATIONAL TUBE COMPANY, PITTSBURGH • TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST • UNITED STATES STEEL EXPORT COMPANY, NEW YORK



U·S·S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

0-318

UNITED STATES STEEL



WATER COOLERS

Keep 'em Smiling while they're filing

Employees stay on their toes

More work - no shirk

It's the heart that counts - G.E. sealed cooling units save money, last for years

G.E. wins hands down-tip-toe tap

G.E. makes sanitary china top

Water Coolers

PRESSURE AND BOTTLE TYPES

GENERAL ELECTRIC

free

Mail coupon with letterhead for free beverage thermometer. Check the temperature of your drinking water. General Electric Co., Sec. P-4, Air Conditioning Dept., Bloomfield, N. J.

NAME.....

ADDRESS.....

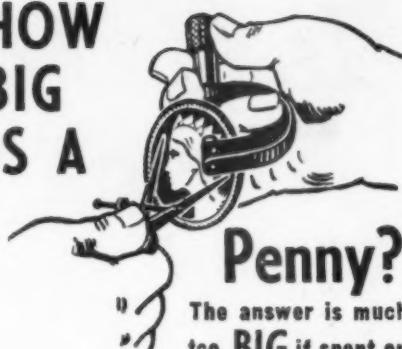
CITY.....

STATE.....

BEMIS INSTALLS "CLIMATE-CONTROL" EQUIPMENT IN LABORATORY

For studying and experimenting with bags and bag-making materials under a wide range of atmospheric conditions, the General Engineering Research Laboratory of Bemis Bro. Bag Co., St. Louis, has put into operation a new controlled-climate testing chamber with which it is possible to reproduce accurately the average climatic conditions encountered in most in most countries of the world. The type of climate prevailing in Arctic regions is the main exception. The equipment will be used principally to determine the protective qualities of all types of bags under various climatic conditions and to test the effectiveness of fungus- and mildew-proofing treatment.

HOW BIG IS A



The answer is much too BIG if spent on

products that do not meet your needs.

Specify STEINEN

• SCREW MACHINE PRODUCTS

• STAMPINGS

Fibre—Phenolite

Metal—Plastic

Sub.—Complete

and save through better quality.

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WM. STEINEN MFG. CO.

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Newark 5, N. J.

Market 2-5747

Since 1907

Like Walking on a Cloud

The Floor Mat That Reduces Fatigue

Lam-tex

MOLDED RUBBER FLOOR MATS



Made of Latex Bonded Neoprene-Soft-Porous-Resilient-Tough and \$5.75 ea Washable, 20x36x 1/2" thick.

Order from your jobber or write direct

Pittsburgh TAG COMPANY
1112-20 Galveston Ave., Pittsburgh 12, Pa.

NEW INSPECTION METHOD

Clean Surface



STEP
1

Apply
Dye
Penetrant



STEP
2

Remove
Excess
Dye



STEP
3

Apply
Developer
Flaws
Are
Revealed



STEP
4

These four simple steps enable anyone to determine the location, extent, and nature of surface flaws or discontinuities in any metal.

Four Simple Steps for Easy, Economical Quality Control & Preventive Maintenance

The Dy-Chek inspection process involves the use of three special liquid compounds, non-corrosive and easily applied by brush, spray, or dipping. STEP 1—Clean surface with Dy-Chek Cleaner; STEP 2—apply red Dye Penetrant; STEP 3—remove excess Penetrant with Cleaner; STEP 4—apply white Developer...brilliant red indications appear quickly if flaws are present.

Requires no electricity, lights, or special installations

The only requirements for Dy-Chek inspection are the three liquids, and simple equipment—such as brushes, sprays, or dip tanks—for applying the liquids.

**Dy-Chek
Inspection
Can Be Used
Anywhere!**

Complete portability takes rigid inspection into the field for use by anyone without special training. Dy-Chek's low cost extends precise inspection to even the smallest companies. Ample supplies for inspecting large areas of metallic surface can easily be carried to any location. On the other hand, the simplicity of the process lends itself equally well to installation in a plant for production-line inspection.



SOLD DIRECT

division of
Northrop Aircraft, Inc.

**1503 EAST BROADWAY
HAWTHORNE, CALIFORNIA**

dy-Chek — the dye penetrant inspection method

Revolutionary DY-CHEK
TRADE-MARK
Process Quickly Inspects
Any Metal For Flaws



DY-CHEK, THE DYE PENETRANT METHOD OF INSPECTION* permits anyone anywhere quickly and conveniently to inspect any metal for flaws or discontinuities having surface openings. Castings, forgings, machined parts, plate, sheet, tubing, weldments...aluminum and its alloys, cobalt, copper and its alloys, iron and its alloys, magnesium, nickel and its alloys, etc...magnetic and non-magnetic...all can be surface inspected by the Dy-Chek process. The surface need not be smooth. Dy-Chek is a proven economical process developed by Northrop Aircraft Research, and is already widely used in many industries.

*Pat. Pend.



Positive Dy-Chek Indications Clearly Reveal Flaws

Dy-Chek inspection reveals both the nature and extent of surface discontinuities. A Red Line indicates a crack, cold shut, or similar opening; Red Dots indicate pits or porosity; a Series of Red Dots in a Line indicates a tight crack or cold shut, or a partially welded lap. The extent of the flaw on and beneath the surface is easily estimated by the width of the Dy-Chek indication.

SEND TODAY for COMPLETE INFORMATION

The simple, economical Dy-Chek process is available immediately for manufacturing inspection, receiving inspection, and preventive maintenance. Write today for complete details on how to simplify your inspection problems.

Dy-Chek Company

1503 East Broadway, Hawthorne, California

Send by return mail complete details on the Dy-Chek Dye Penetrant Method of inspection for any metal.

Name _____ Title _____

Company _____

Address _____

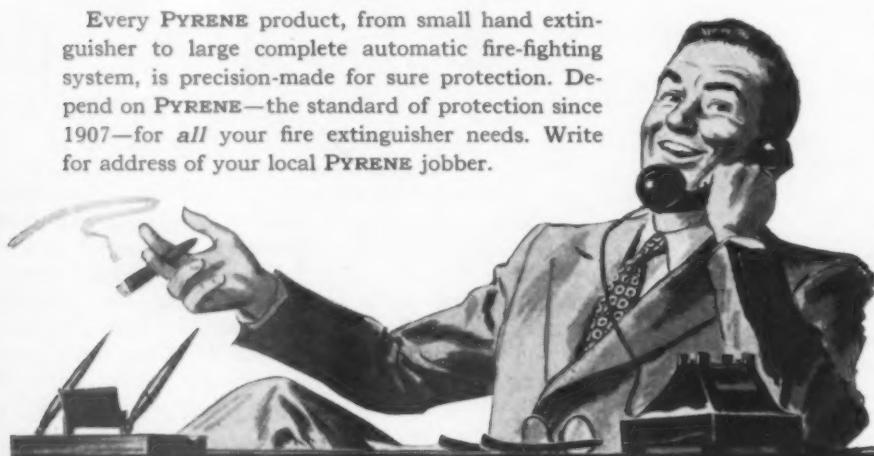
City _____ Zone _____ State _____

One call is all— when you buy Pyrene

**Buy fire extinguishers the reliable, prompt, economical,
easy way—from your local Pyrene jobber.**

When you standardize on PYRENE,* available in various types and sizes, you can depend on one source of supply for all your buying. You get immediate delivery, and you pay no freight charges. You work with one purchase order, one invoice. And you deal with an established business organization right in your own community.

Every PYRENE product, from small hand extinguisher to large complete automatic fire-fighting system, is precision-made for sure protection. Depend on PYRENE—the standard of protection since 1907—for all your fire extinguisher needs. Write for address of your local PYRENE jobber.



There's a
PYRENE
for every
fire hazard



*T.M. Reg. U.S. Pat. Off.



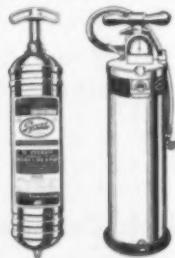
CARTRIDGE-OPERATED
Eliminates annual recharging. For fires in wood, paper, textiles, etc. Shoots water or anti-freeze solution. 2½ gal. size. Also 2½ gal. and 5 gal. pump tanks.



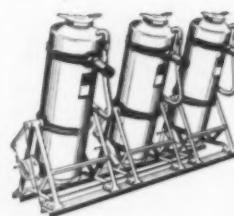
SODA-ACID
Standard protection for ordinary combustibles. Shoots a steady 40 ft. stream. 2½ gal. size. For offices, factories, stores. Also in 40 gal. wheeled units.



CHEMICAL FOAM
2½ gal. size produces about 22 gals. of fast-acting foam. Ideal for flammable liquid and ordinary combustible hazards. Also in 10 gal. and 40 gal. wheeled units.



VAPORIZING LIQUID
The all-purpose extinguisher effective on almost every kind of fire. Safe on electrical fires, too! 1 qt. and 1½ qt. pump types; 2 qt. and 1 gal. pressure-operated types.



MANUAL AND AUTOMATIC SYSTEMS
Complete fire-fighting systems, using chemical foam or air foam. Also Pyrene air foam playpipes.

PYRENE MANUFACTURING COMPANY

578 Belmont Avenue

Newark 8, N. J.

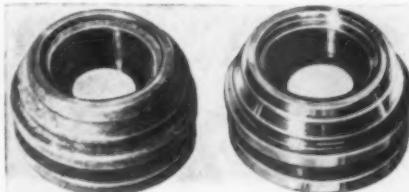
Affiliated with C-O-Two Fire Equipment Co.

(Continued from page 212)

even under conditions favoring decay; heartwood is rated in the upper brackets by the Forest Products Laboratory for durability under decay-fostering conditions. In glueability it is rated in Group 2, next to the top.

Combining raw strength with delightful grain configuration, Douglas Fir can be used for the heaviest of structural work to fine finish purposes and for the many utility uses in between. But it's in the heavy construction field that it stands supreme. For warehouse and factory trussed roofs, for bridges and trestles, for beams, posts, studs, stringers, joists, rafters and decking and for the many miscellaneous railroad uses, Douglas Fir of the Western Pine region is one of the nation's top wood species.

WRAPPING PAPERS PROVIDE CHEMICAL PROTECTION AGAINST CORROSION



The accompanying illustration shows on the left, a bearing cup wrapped in untreated creped 30/30/30 asphalt duplex paper, and on the right a similar cup wrapped in T.R.I. treated creped 30/30/30 asphalt duplex paper. The latter is mirror bright and free of blemishes. The T.R.I. (Thilco Rust Inhibitor) wrapping papers for chemical protection against corrosion of ferrous metals are products of the Thilco Paper Co., Kaukauna, Wis. The T.R.I. treated papers preserve ferrous metals from one month to two years dependent upon storage, kind of paper used, and type of package. They exert their protective action by forming an invisible rust-preventive film on the product. T.R.I. prevents contact corrosion, and is non-injurious to other metals, rubber and plastic materials. It requires no special packaging or closure methods. T.R.I. papers are available in kraft, plain or printed, crinkled craft, crinkled waterproof papers, wax laminated or coated papers, duplex waterproof papers, reinforced waterproof papers and specialty bags. Samples and printed matter available on request.

DEVELOP PROCESS FOR USE OF POLYETHYLENE AS LINER

The Shipping Container Sales Division of Wheeling Steel Corp., Wheeling, W. Va., announces development of a method whereby a satisfactory polyethylene liner for steel containers, in controlled film thicknesses can be obtained with the use of present standard manufacturing equipment. Adaptations of the materials now enable the packaging of products heretofore thought impossible.

(Please turn to page 216)



AUTO-LITE

With greatly increased manufacturing facilities, Auto-Lite is now more than ever before the logical source of high quality industrial wire and cable and wiring assemblies. Any type, size, shape or insulation required by your specifications can be promptly delivered.



THE ELECTRIC AUTO-LITE COMPANY

Wire and Cable Division

Port Huron, Mich.

Hazleton, Pa.

WIRE

AND

CABLE



Inquiries invited Catalogs with
complete descriptive data will be sent on
request. Write on your company letterhead.

TUNE IN "SUSPENSE!"...CBS RADIO NETWORK THURSDAYS...CBS TELEVISION TUESDAYS

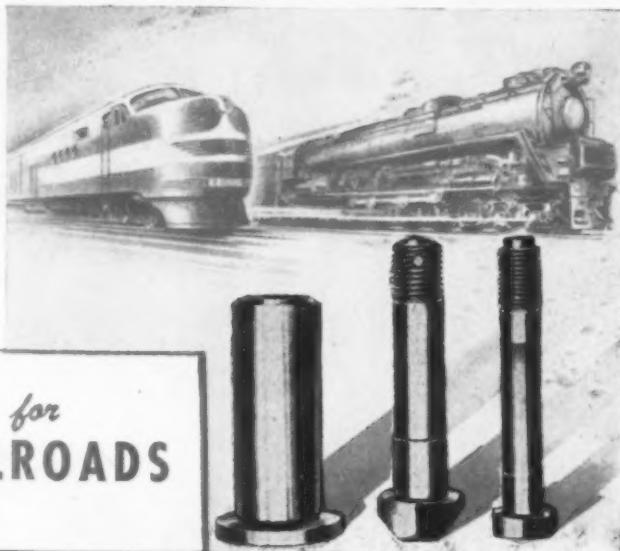
SEPTEMBER, 1950

Want Additional Product Information? See Page 19.

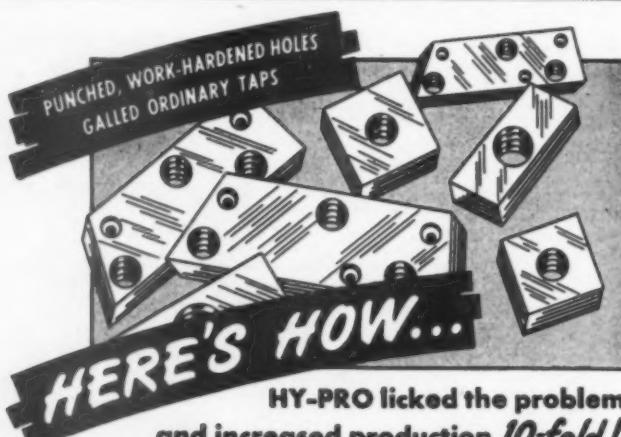
215

ERIE SPECIAL BOLTING FOR HEAVY MACHINERY

FOR over 30 years ERIE has specialized in the manufacture of high quality bolting. We use the very latest equipment for heat treating, machining, grinding and threading. We are certain that we can produce better bolting at a saving to you because we are specialists — send us your bolting specification for our estimate.



A DEPENDABLE SOURCE OF HIGH QUALITY BOLTING FOR RAILROADS, REFINERIES, DIESELS, FARM MACHINERY, EXCAVATING EQUIPMENT AND ALL TYPES OF HEAVY MACHINERY.



PARTS: Anchor pieces of 1020 steel with punched holes.
PROBLEM: Tapping with ordinary taps had to be done at very low speeds to prevent welding tap to piece. Changing cutting oil made no difference. Taps were continually galling in the soft, stringy material.

Then they called the Hy-Pro Sales Engineer.

HY-PRO SOLUTION: He recommended a Hy-Pro $\frac{1}{4}$ -24 3 Flute Spiral Point Tap with the exclusive Hy-Pro Ferrox Surface Finish. Running at a speed of 50'/min. with a water-soluble lubricant, production increased tenfold. The Hy-Pro Taps never galled in the soft, stringy steel and stayed sharp longer in spite of the work-hardened, punched holes.

RX Let Hy-Pro solve your tapping problem too—call a Hy-Pro Sales Engineer today.

Order from your Distributor

**HY-PRO
TAPS**

HY-PRO TOOL CO.

NEW BEDFORD, MASSACHUSETTS

A SUBSIDIARY OF CONTINENTAL SCREW COMPANY



TITANIUM COMPOUND GIVES FLAME RESISTANCE TO CELLULOSIC TEXTILES

Development of a new product which gives lasting flame-resistance to cellulosic materials of all types has been announced by the Titanium Division of National Lead Company, New York 6, N. Y. When treatment is properly applied, appearance, tensile strength and "feel" of cotton and rayon, for example, are not affected and the fabric will withstand repeated laundering, drycleaning and weathering. Exposure to the acid sours and alkalis used in commercial and industrial laundries does not affect its lasting flame-resistant qualities in a fabric.

The new product called "Titanox"-Fr, is a titanium organic compound, although other materials are added to lessen afterglow and improve stability. The material will be marketed as a solution.

The new process utilizing "Titanox"-Fr will treat successfully light-weight curtain materials, such as organdy, marquisette and dotted swiss, as well as drapery and upholstery materials, broadcloth, flannel, duck, yarns and other cellulosic materials. The treatment only increases the weight of the fabric about 15 percent. In addition, the process can be used to make paper, cotton linters, kapok and wood fire-resistant. Wood flour, used in linoleum and some wallboards, can also be treated successfully with the process.

This new process is complicated and can only be applied by textile finishers. Flame applied to the treated fabrics results in a char area only in the heated portion. The material will not support a flame or show a flare-up on a brushed napped and pile fabric such as chenille or plush. Trial runs in various textile mills have been conducted successfully.

"Titanox"-Fr fire-resistant sales will be handled by the Titanium Pigment Corporation of National Lead Company.

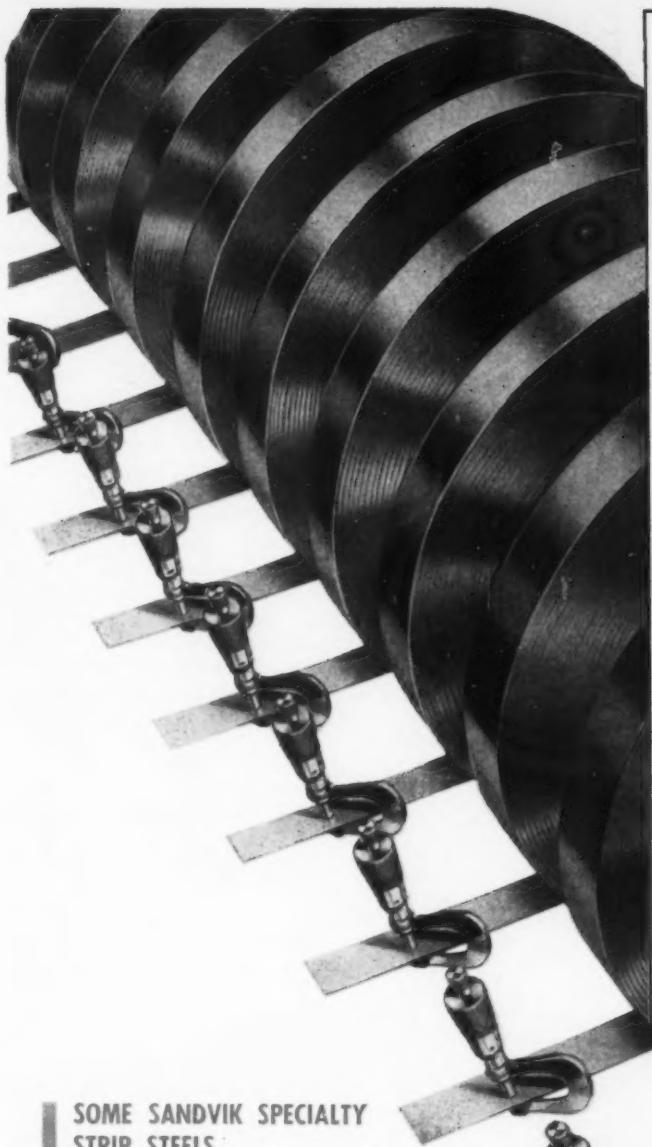
IRON ORE RESERVES GREATER THAN RECORDS INDICATE

Far from the gloomy forebodings of some published articles indicating a shortage of readily available iron ore, the choice before steel companies is just which reserves to develop, said C. C. Henning, general manager of raw materials, and R. W. Braund, assistant general superintendent of iron mines, Jones & Laughlin Steel Corporation, Pittsburgh, at the meeting of American Iron and Steel Institute in New York.

Reserves, they assert, are far more than statistical records indicate. The flow of ore from various sources is expected to increase from year to year, gradually removing the pressure on the open pits of Minnesota.

"Practically every steel producer and many mining companies now have an elaborate, well staffed research department," said the authors, "backed up by

(Please turn to page 218)



SANDVIK SPRING STEEL *Duplicates Precision* COIL AFTER COIL, LOT TO LOT

For your application, Sandvik's accuracy of gauge assures continuous, uniform precision.

An accurate "mike" will tell the story. It will show your specified gauge repeated consistently both across and along the strip on coil after coil, lot to lot.

Sandvik strip steels are available:

- Precision rolled in thicknesses from .001"
- In straight carbon and alloy grades
- In special analyses for specific applications
- Annealed, unannealed or hardened and tempered
- In a wide range of widths
- Unpolished or polished bright, yellow or blue
- With square or round edges

Phone, write or wire your nearest Sandvik office for further information or technical help.

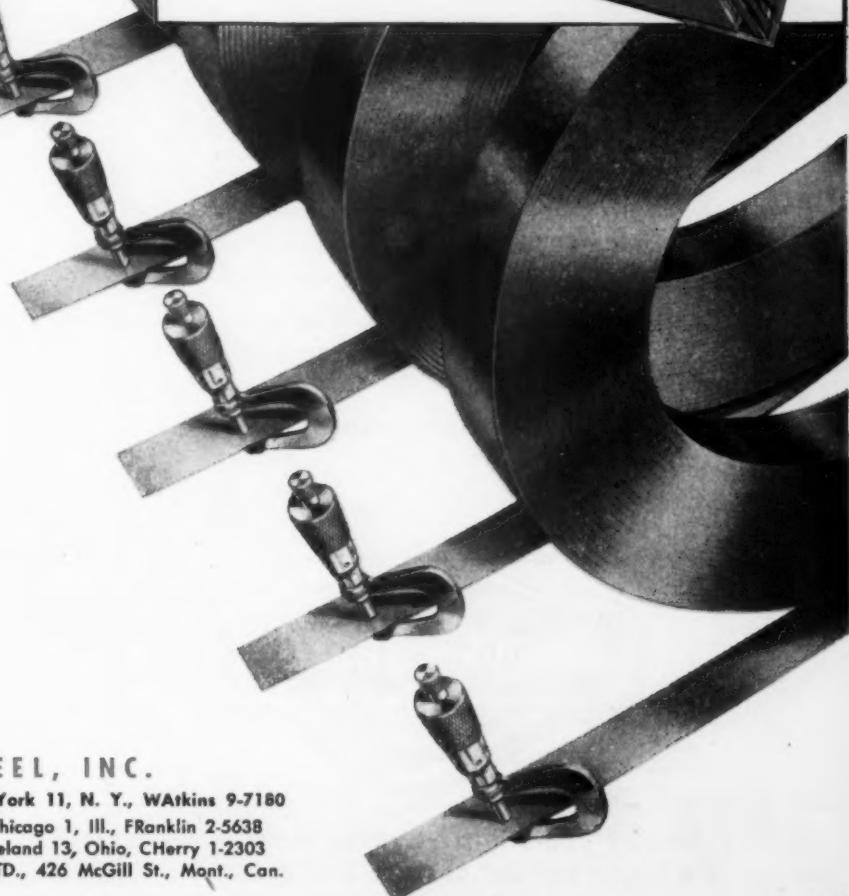
DO YOU HAVE YOUR COPY OF THIS FREE, NEW SANDVIK CATALOG?

Catalogues 785 sizes. Gives thickness, width, hardness, types of edges and weight in pounds per hundred feet. Also useful conversion tables. Write, on your letter-head, today.



SOME SANDVIK SPECIALTY STRIP STEELS

Steel for Textile Machine Parts
Band Saw Steels; Metal Band,
Wood Band & Spring Temper
Camera Shutter Steel
Clock and Watch Spring Steels
Compressor Valve Steel
Doctor Blade Steel
Feeler Gauge Steel
Knife Steels
Razor Blade Steel
Reed Steel
Shock Absorber Steel
Sinker Steel
Spring Steels
Trowel Steel
Vibrator Reed Steel, etc.



SANDVIK STEEL, INC.

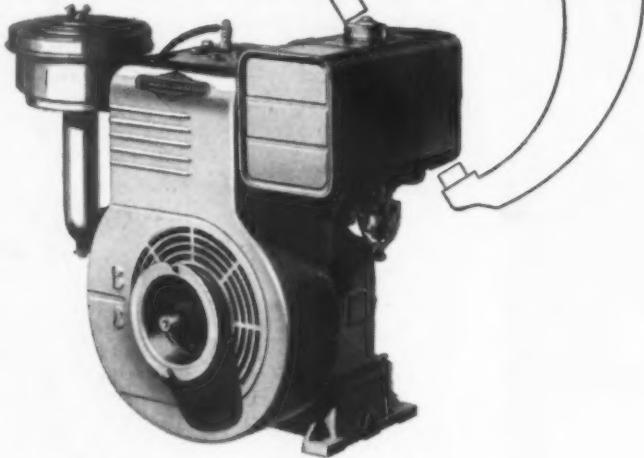
111 Eighth Ave., New York 11, N. Y., WAtkins 9-7180
230 N. Michigan Ave., Chicago 1, Ill., FRanklin 2-5638
1736 Columbus Rd., Cleveland 13, Ohio, CHerry 1-2303
SANDVIK CANADIAN LTD., 426 McGill St., Mont., Can.

SS-61

YOU CAN BE SURE OF UNIFORM

Quality

IN BRIGGS & STRATTON ENGINES



The most modern machines and tools for volume production with watch-like precision (many of them developed by Briggs & Stratton engineers), plus constant check and rigid inspection, are used to maintain uniform quality to meet the high exacting standards established by Briggs & Stratton — the result of the engineering and manufacturing experience gained in more than 32 years of continuous production, and the building of more than 4½ million single-cylinder, 4-cycle, air-cooled gasoline engines.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wis., U. S. A.



In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

(Continued from page 216)

modern laboratory facilities and equipment. These departments are conducting studies on many phases of the industry's problems. Of late years, the technology divisions of many organizations have been given greater recognition and authority. This has enabled them to follow up pilot plant scale tests by large scale tests of many months' duration in the mills. This alone has altered several operating procedures with the end result that large quantities of hitherto unacceptable raw materials have been placed in the desirable classification."

In regard to coking coal, the authors state that construction of the necessary beneficiation plants, together with technological progress, will improve quality and maintain acceptable reserves.

On limestone, it is pointed out, present sources are adequate.

Among the reasons for the diversion of steel freight from the railroads in recent years, the speaker mentioned the following: Increase in number, scope and "know-how" of truckers specializing in hauling iron and steel; improvements in motor equipment and highways; increase in rail freight rates since the middle of 1946; good service of trucks for distances up to 400 miles, which distance frequently includes major steel producers and their markets.

Among the difficulties in truck transportation, Mr. Rhodehouse discussed the following: Most mills prefer to ship by rail because their plants have been built mainly to accommodate railroad loading; where loading would involve hundreds of trucks a week, scheduling becomes more difficult as needs increase; highway safety requirements make it more difficult to obtain suitable motor equipment, resulting in delays and increased costs.

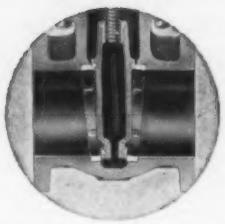
A problem of a different kind arises from the difficulty of an industry traffic man to determine quickly the rates and routes of motor carriers, as there is no definitely established pattern for all truck lines.

1 1 1

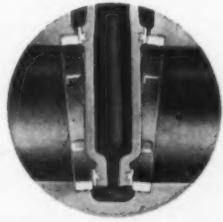
PIGMENTED WALL PRIMER-SEALER FOR DRY WALLS

A pigmented wall primer-sealer said to provide the first practical answer to the problem of painting dry wall construction, is announced by Devoe & Raynolds Co., who say that the new product is designed for interior walls of plaster and masonry or composition wallboard. The product is featured by firm adhesion and controlled penetration, making a single coat of sealer sufficient for even highly porous surfaces. It is said to permit the use of deep-tone flat colors without cloudiness or the appearance of "shiners" over patched joints in dry wall construction. The primer sealer can be used as an undercoat in refinishing work or as a primer for combination masonry and plaster and wood. It is manufactured in a non-blue white and can be tinted.

(Please turn to page 220)



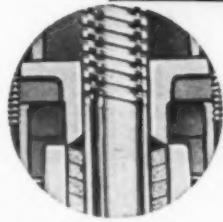
Straight-Flow Port Design reduces fluid turbulence to a practical minimum.



Seat Rings of end-seated type are screwed into the body.



Sure-Grip Malleable Handwheel for non-skid gripping even with heavy gloves.



Brass Liner on Glands assures greater resistance to corrosion and scoring.

WALWORTH

iron body gate valves

with screwed or flanged ends



For complete information on these new Walworth Iron Body Valves, see your local Walworth distributor, or write for bulletin 106.

... 8 Outstanding Features

WALWORTH

valves and fittings

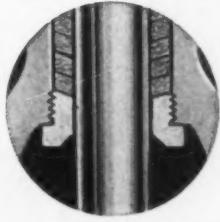
60 EAST 42nd STREET

NEW YORK 17, N. Y.

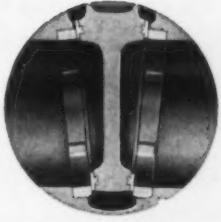
DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



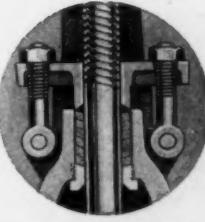
T-head Disc-to-Stem connection on OS&Y types provides stronger connection, prevents loosening of disc by corrosion.



Bronze Back-Seat Bushings in bonnets of OS&Y valves.



Solid Web Type Disc in OS&Y valves for greater strength and longer service.



Hinged Gland Eye-Bolts on OS&Y valves permit faster, easier repacking under full pressure.

RIG IT IN 5 seconds!

AMERICAN HEAVY DUTY UTILITY SNATCH BLOCK



Here's a snatch block any man can rig in 5 seconds... without a wrench! No loose parts; nothing to drop or lose. Available in 6", 8" and 10" sheave diameters. Sold by distributors everywhere. For catalog showing all wire rope blocks—1/2 to 250 tons.

MAIL THIS COUPON

American Hoist

& Derrick Company

St. Paul 1, Minnesota

- Please send catalog on AMERICAN UTILITY SNATCH BLOCKS.

NAME _____

COMPANY _____

ADDRESS _____

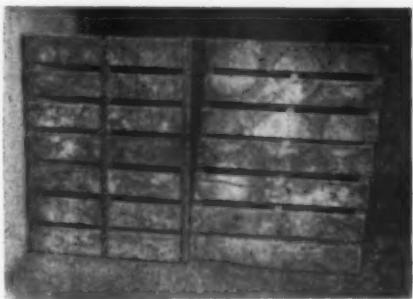
CITY _____ ZONE _____ STATE _____

MONSANTO ANNOUNCES NEW COLD SETTING UREA RESIN

Development of a new cold setting urea resin glue with greatly improved storage stability is announced by the Monsanto Chemical Company, Springfield, Mass. The new product, Lauxite UF77A, with catalyst incorporated, was developed to answer storage problems of woodwork manufacturers during hot summer months. It has been laboratory and field tested successfully for ordinary cold gluing and high frequency gluing. A water ratio of six pounds to ten pounds of the new product is specified.

1 1 1

STRAPPING CUTS COST OF PALLET REPLACEMENT AND REPAIRS



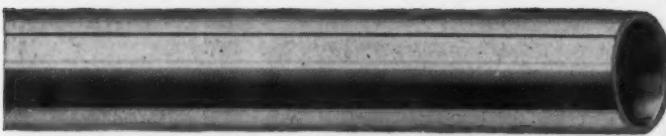
The cost each year of replacing, repairing and rebuilding pallets runs into hundreds of thousands of dollars. These figures do not include the money losses sustained when pallets weakened by repeated assaults of hurried fork truck operators, fail, and valuable products are badly damaged. A simple, but highly effective method of pallet protection that any user of pallets can employ is now in use in thousands of shipping departments. It is the Signode method of reinforcing pallets with steel strapping. Bands of steel strapping are tensioned over pallet top and around runners, and stapled in place. Some of the advantages are: (1) keeps nails from pulling loose; (2) prevents splitting of boards at nails; (3) holds boards tight to runners; (4) keeps pallets rigid and free from distortion caused by dropping pallet on its corners; (5) strapped pallets last twice as long—save twice as much money as they cost. Complete details of application methods, sizes of strapping to use and other information are available from the Signode Steel Strapping Company, 2640 N. Western Avenue, Chicago 47, Ill.

1 1 1

BULLETIN SHOWS NIPPLE PACKAGE QUANTITIES AND WEIGHTS

Folder showing standard lengths and diameters of pipe nipples that are available in standard and assorted packages which comply with United States Department of Commerce, Bureau of Standards Specifications CS-5-46 Addenda, has been issued by the Chicago Nipple Manufacturing Co., 1966 No. Southport Ave., Chicago, Ill.

RESISTANCE TO CORROSION



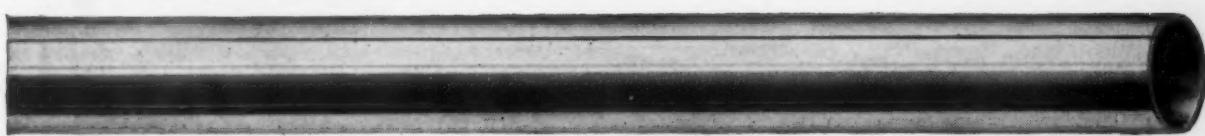
STRENGTH AT HIGH TEMPERATURES



RESISTANCE TO OXIDATION



EASE OF FABRICATION

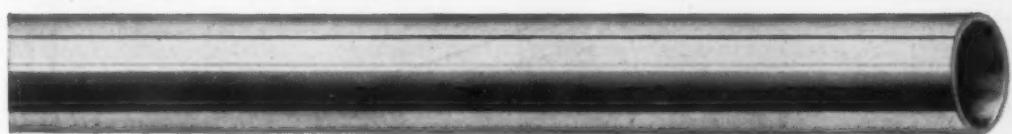


TYPICAL ANALYSES: 301 - 302 - 302B - 304 - 308 - 309 - 309S - 309Cb - 310 - 314 - 316
316Cb - 317 - 321 - 329 - 330 - 347 - 403 - 405 - 410 - 416 - 430 - 443 - 446 Inconel* Nichrome**

*Registered U. S. Trade-Mark. **Trade-Mark Reg. U. S. Pat. Off.-D-H Co.



SEAMLESS OR WELDED



Globe produces 26 standard analyses of stainless steel tubes — also special analyses when required.

Globe seamless stainless steel tubing may be had in sizes from $\frac{1}{2}$ inch to $6\frac{1}{8}$ inches O.D., and in pipe sizes $\frac{1}{8}$ inch to 6 inches, standard, extra strong and double extra strong weights.

Gloweld electric welded stainless steel tubing may be had in sizes ranging from $\frac{1}{4}$ inch to 5 inches O.D. inclusive; in standard weight pipe (schedule 40) sizes $\frac{1}{8}$ inch to 2 inches — in light weld pipe (schedule 40) sizes $\frac{1}{8}$ inch to $4\frac{1}{2}$ inches inclusive.

Globe engineers gladly give you the benefit of specialized knowledge of stainless steel tubing in a wide range of services and applications — to improve your product — to cut costs.

GLOBE STEEL TUBES CO., Milwaukee 4, Wis.

Chicago • Minneapolis • Cleveland • Detroit • New York • Philadelphia
St. Louis • Tulsa • Houston • Denver • San Francisco • Glendale, Cal.

SEPTEMBER, 1950

Want Additional Product Information? See Page 19.

**What's Your Job For
Stainless Steel Tubing? . . .**

**Do The Job Best With The
Best Tubing For The Job — Get**

GLOBE
STAINLESS STEEL TUBES
Seamless or Welded



GLOBE SEAMLESS
STAINLESS STEEL TUBES

GLOWELD WELDED
STAINLESS STEEL TUBES

Write for Bulletin 301 — Corrosion and Heat Resisting Steel Analyses Chart—a valuable reference tabulation of stainless steel analyses as produced by various manufacturers.



PERSONALITIES

in the NEWS

Herman P. Holloway, Acting Purchasing Manager, has been named Purchasing Manager for Fairchild Engine and Airplane Corporation, NEPA Division, Oak



Herman P. Holloway

Ridge, Tenn. He is located at the corporation's offices in Knoxville, Tenn.

Mr. Holloway came to the department in early 1947, shortly after the NEPA project began. He previously held purchasing positions with Clinton Engineer Works-Tennessee Eastman Corporation, E. I. du Pont de Nemours and Company, and Remington Arms Company, Inc.

John D. Walter has joined the purchasing Section of the General Electric Company's Receiver Division at Syracuse, N. Y. He was engaged in construction



John D. Walter

work for several years before joining James Stewart Company in 1941 as Purchasing Agent at Baltimore. Later he moved to Chicago to become Manager

of Purchases and Materials and Coordinator. The Stewart Company loaned him to the Navy in 1944, where he served as Purchasing Agent at Chicago until the end of the war. From then until his recent appointment he was a buyer of housewares for Montgomery Ward.

C. Warner McVicar has been appointed Assistant Vice President of Purchasing activities of the various subsidiaries and divisions of the Rockwell Manufacturing Company, Pittsburgh, Pa. The announcement was made by W. H. Newbaker, Vice President of Purchasing and Traffic.

For 16 years, Mr. McVicar was affiliated with the Detroit and Cleveland Nav-



C. Warner McVicar

igation Company, Detroit, Mich. He then became a Chief in the Contract Clearance Division of the Navy Department before joining the Lord Manufacturing Co., Erie, Pa., as Director of Purchasing. In 1945 he was consultant for the War Assets Administration and later was Assistant to the President and Director of Purchases for Brezner Tenning Corp., Penacook, N. H., and Senior Buyer for the Ford Motor Company, Dearborn, Mich. He is a past director of both the Detroit and Washington, D. C. Purchasing Agents Associations.

Eugene F. Wambold has been named to the newly created post of executive vice-president in charge of manufacturing, engineering, purchasing, and employee and community relations of Carboley Company, Inc., Detroit, Mich.

Leroy W. Grant has been advanced to the position of Purchasing Agent of The F. W. Wakefield Brass Company, Vermilion, O. Mr. Grant joined the com-



Leroy W. Grant

pany in 1942 as Assistant Purchasing Agent and Office Manager after three years of public service company sales work.

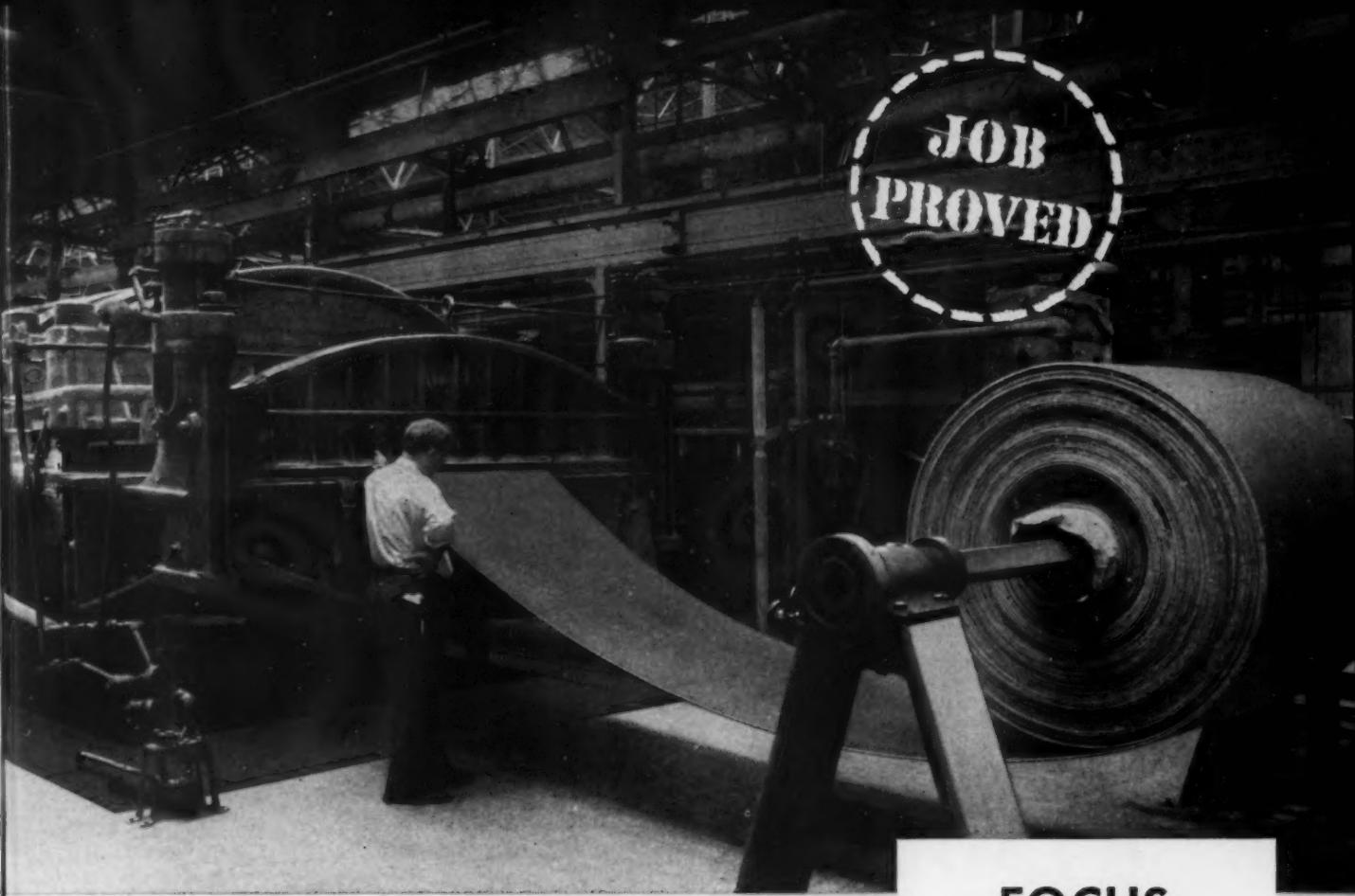
William M. Bergemann has been appointed Director of Purchases of The Falk Corporation, Milwaukee, Wis. Associated with the firm for the past 10 years, Mr. Bergemann has been a tool designer, machine shop maintenance engineer and most recently held the position of Assistant to the Works Manager. Howard Larsen has been named Purchasing Agent



William M. Bergemann

to replace Thomas I. Scanlan who retired this month. Mr. Larsen was formerly Assistant Purchasing Agent.

(Please turn to page 224)



\$6,000 A YEAR INVENTORY SAVING

**Quality of Products Also Improved
by Change in Rubber-Processing Aids**

What to do when competition turns on the heat? Reduce costs and step up quality, of course. Easy to say, tough to do. The trick was turned, however, by one of the rubber industry's Big-Four producers of transmission and conveyor belting.

The manufacturer believed room for improvement lay in the variety and quality of oils he was using to process rubber for the big belts. For advice, he called in a Sun Oil Company representative, who suggested tests with two "Job Proved" Sun rubber-processing aids. Results indicated that Circosol-2XH in natural and GR-S stocks, and Circo Light Rubber-Processing Aid in neoprene and other synthetics, would mean easier processing and more durable belting.

For verification, small-scale pro-

duction batches were prepared with the help of the Sun man. These bore out laboratory findings conclusively. Later, field reports revealed that belts made with Sun processing aids gave increased service. Circosol-2XH and Circo Light Rubber-Processing Aid completely replaced the five oils previously used. With inventory problems greatly simplified, the Sun man urged the manufacturer to install bulk oil-storage facilities. This done, quantity purchasing saved an estimated \$6,000 a year.

For help on lubrication, processing or combustion problems, call the nearest Sun Office. No obligation, of course.

SUN OIL COMPANY • Philadelphia 3, Pa.
*In Canada: Sun Oil Company, Ltd.
Toronto and Montreal*

SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY

FOCUS

A problem isn't recognized as a problem until it is brought into focus. Inventories, for example, are low until someone demonstrates a way to keep them lower. Quality is fine until someone—maybe the competition—discovers a way to improve it. Costs are under control until someone points the way to worth-while savings. Time and time again Sun field men, with their broad industrial experience, have proved their ability to bring processing and lubrication problems into focus and make constructive recommendations to manufacturers.





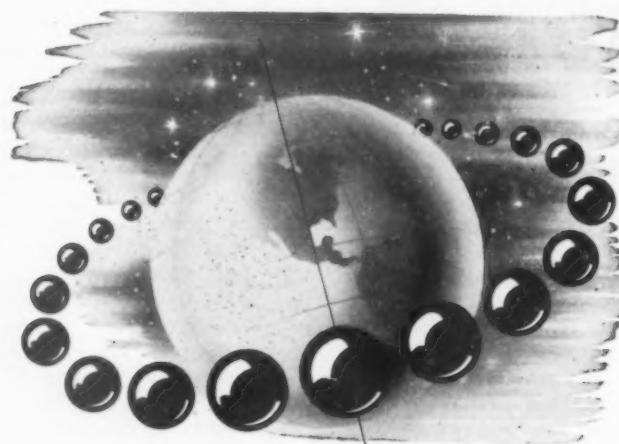
Save Money by Buying Your SCREW MACHINE PARTS from KEMPSMITH

Now — You can get high-quality screw machine parts from a reliable manufacturer at a substantial saving. In the modern, well-equipped Kempsmith plant, you will find a battery of six spindle automatics from 9/16" to 3 1/2" diameter and single spindle machines from 9/16" to 6 1/4" diameter. Also plenty of hobbing, splining, broaching and other second operation equipment. These high-speed, precision machines are available to YOU for producing your screw machine parts. They enable you to get costs down to meet competitive bids. All metals can be processed. Send us your blueprints. Our quotation will follow immediately.

KEMPSMITH MACHINE CO., 1863 S. 71st ST., MILWAUKEE 14, WIS., U.S.A.

KEMPSMITH

Supplying the Needs of Industry Since 1888



Around the World it's
HOOVER BALLS

made of

CHROME STEEL - CARBON

STEEL - STAINLESS STEEL

BRASS - BRONZE AND

MONEL METAL

"America's Foremost
Ball Manufacturer"

HOOVER BALL AND BEARING CO.
Ann Arbor, Michigan

Harrison M. Rainie has been elected Vice President—Purchases and Stores of the Boston and Maine Railroad, the Maine Central Railroad, and the Portland Terminal Company. Shortly after his election, Mr. Rainie announced that George H. Bolton had been appointed as Purchasing Agent and E. R. Rand as Tie and Timber Agent of the Boston and Maine Railroad.



Harrison M. Rainie

Mr. Rainie started his railroad service on the Boston and Maine in 1909 in the car department. After various stores positions he became Assistant Purchasing Agent at Boston in 1924 and was advanced to Purchasing Agent in 1933, which position he held until his recent election.



George H. Bolton

Mr. Bolton entered the railroad as a clerk in the publicity and advertising department in 1917, and transferred to the purchasing and stores department a year later. In 1930 he was appointed chief clerk and in 1940, Assistant to the Purchasing Agent. He was promoted in 1948 to Tie and Timber Agent.

Mr. Rand has held various purchasing positions with the railroad since joining it as a clerk in the purchasing and stores department at Somerville in 1925. Since 1946 he has been a Buyer.

H. D. Wright has been appointed General Purchasing Agent of The E. B. Eddy Company, which has head offices in Hull, Quebec. Mr. Wright joined the company in 1923 after early business training in the British Isles and Canada. He has risen from junior buyer to his present position since. He has served on the executive board of the Purchasing Agents Association of Montreal, and is Regional Coal Chairman for Canada for the National Association of Purchasing Agents.

(Please turn to page 226)



Best Buy in Variable Speed!

COMPARE THESE FEATURES of *Vari-Pitch* Automatic sheave with any other variable speed drive and see why *Vari-Pitch* Automatic drive gives you more for your drive dollar.

1. Changes speeds with one hand while machine is running.
2. All mechanism is inside one sheave actuated by movement of the motor base.
3. Ample capacity and safety factor of multiple belts.
4. Full range of sizes from 1 to 40 hp.
5. Top speed is 100% higher than low speed.
6. Quiet operation.

Vari-Pitch and *Texrope* are Allis-Chalmers trademarks.

7. Cushioned start.
8. Simple design and easy installation make cost low.
9. Occupies no more space than ordinary sheave.

Vari-Pitch Automatic drive will pay for itself very quickly in increased production, improved quality and more flexible operation on many machines in your plant. Ask your Allis-Chalmers Authorized Dealer or Sales Office representative to give you savings and cost figures on your operations. Or write for bulletin 20B7223.

ALLIS-CHALMERS, 923A SO. 70 ST.
MILWAUKEE, WIS.

A-3063



Sold ...

Applied ...

Serviced ...

by Allis-Chalmers Authorized Dealers,
Certified Service Shops and Sales Offices
throughout the country.



MOTORS — $\frac{1}{2}$ to
25,000 hp and up.
All types.

CONTROL — Manual,
magnetic and combination
starters; push button
stations and components
for complete control systems.



PUMPS — Integral
motor and coupled
types from $\frac{3}{4}$ in.
to 72 in. discharge
and up.



ALLIS-CHALMERS

How to meet a payroll (at a cost of \$3.19)



Twenty-four hours before factory payday, another check-writing machine was needed fast. At 10 A.M. plant manager ordered one from supplier 400 miles away. He specified Air Express, the service regularly used to keep production rolling. 26-lb. carton delivered same day at 2 P.M.—in time! Shipping cost only \$3.19!



\$3.19 was total cost—and included door-to-door service! Air Express is the most convenient way for you to ship or receive—in addition to being the world's fastest transportation method.



You get round-the-clock service with Air Express. Shipments go on all flights of the Scheduled Airlines. Air Express is service you can count on to keep your business rolling in high gear.

Air Express gives you all these advantages

World's fastest transportation method.

Special door-to-door service at no extra cost.

One-carrier responsibility all the way.

1150 cities served direct by air; air-rail to 18,000 off-airline offices.

Experienced Air Express has handled over 25 million shipments.

Because of these advantages, regular use of Air Express pays. It's your best air shipping buy. For fastest shipping action, phone Air Express Division, Railway Express Agency. (Many low commodity rates in effect. Investigate.)

AIR EXPRESS

GETS THERE FIRST

AIR EXPRESS

Rates include pick-up and delivery door to door in all principal towns and cities

A service of

Railway Express Agency and the

SCHEDULED AIRLINES of the U.S.

Franklin Rowley, Assistant General Purchasing Agent of Esso Standard Oil Company since 1940, has been elected a director of Esso Export Corporation, international sales affiliate of Standard Oil Company (New Jersey), New York, N. Y. Mr. Rowley's new duties will include the coordination of purchases of materials abroad.

F. J. Murphy has been appointed General Purchasing Agent of Combustion Engineering—Superheater, Inc., New York, N. Y. He was formerly Production Manager of the Chattanooga Division of the company.

Fred A. Harvey, for the past 25 years Purchasing Agent of the Ansonia O & C Co., Ansonia, Conn., has terminated his association with the company. Mr. Harvey, who is secretary of the Purchasing Agents Association of Connecticut, will announce his plans later.

Robert S. Mullen has been named Purchasing Agent for Harvard University, Cambridge, Mass., succeeding Prescott



Robert S. Mullen

Vose, who resigned to become Comptroller of the University of Maine. Mr. Mullen, a graduate of Bowdoin College and Harvard Graduate School of Business Administration, has been Assistant Purchasing Agent of the University since 1947.

Earl E. Udall has been appointed Purchasing Agent of the City of Phoenix, Arizona.

William L. Wagner has been named assistant in charge of steel at Willys-Overland Motors, Inc., Toledo, O. He formerly was with the Dura Division of Detroit Harvester Company.

Other appointments in the Willys-Overland purchasing department, announced by George J. Edelstein, Director of Purchases, are:

Gordon S. Yost, formerly an Assistant Purchasing Agent, has been named Purchasing Agent in charge of chassis parts, electrical equipment, tires and tubes, replacing G. R. Cheetham, who has resigned. Mr. Yost joined Willys in 1948, after 20 years as Director of Purchases for Toledo Scale Company. Gaylord N. McSherry, for 23 years Assistant to the Director of Purchases for the Twin Coach Company, Kent, O., has been named Assistant Purchasing Agent to succeed Mr. Yost.

(Please turn to page 228)

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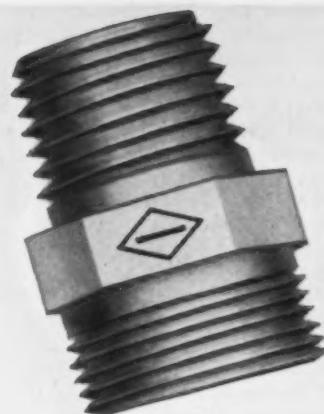
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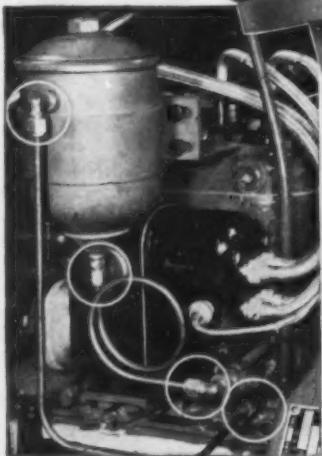
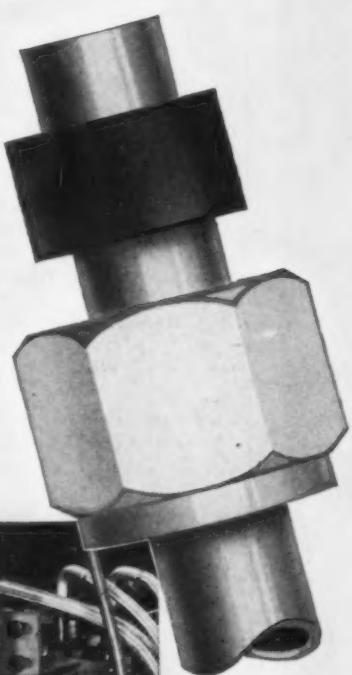
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IMPERIAL FLEX FITTINGS

*... Make Tube Fitting Failures
Unnecessary ...*

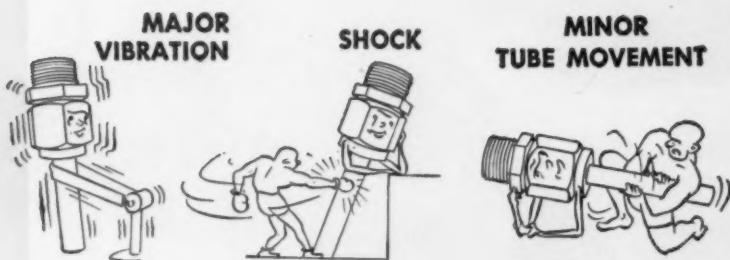
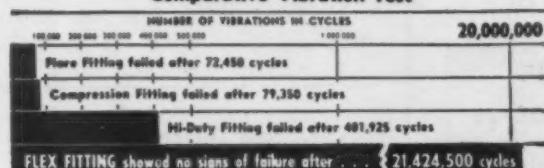
They make up into safer joints that stand up under the most severe operating conditions . . . withstand



standard equipment on trucks, tractors, diesel engines, oil filter connections, heavy power equipment, machinery, etc.

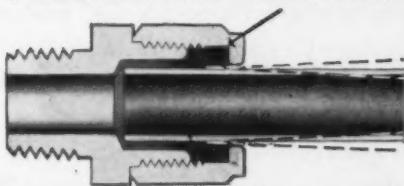
See Your Industrial Supply House
Ask for Catalog No. 344-C.

Comparative Vibration Test



Flex Fittings Make Joints Virtually Indestructible by Vibration . . . On tests where ordinary fittings failed after 73,000 cycles of vibration, Imperial Flex Fittings have withstood over 2,000,000 cycles without failure as indicated in the chart at left.

This Elastic Sleeve in Flex Fittings Absorbs Vibration and Shock . . . permits tubing to flex back and forth through the angle shown . . . at the same time assures a positive, pressure-tight seal.



Easy to Install . . . All that is necessary is to slip nut and Flex sleeve over tubing. Then insert tubing into body as far as it will go and tighten nut to shoulder on body. No guesswork on how far nut should be screwed down. On sizes larger than 1/2" O.D. and where higher pressures are involved, end of tubing should be belled slightly.

Flex Fittings Can Be Used with All Kinds of Tubing . . . Proved by Extensive Use.

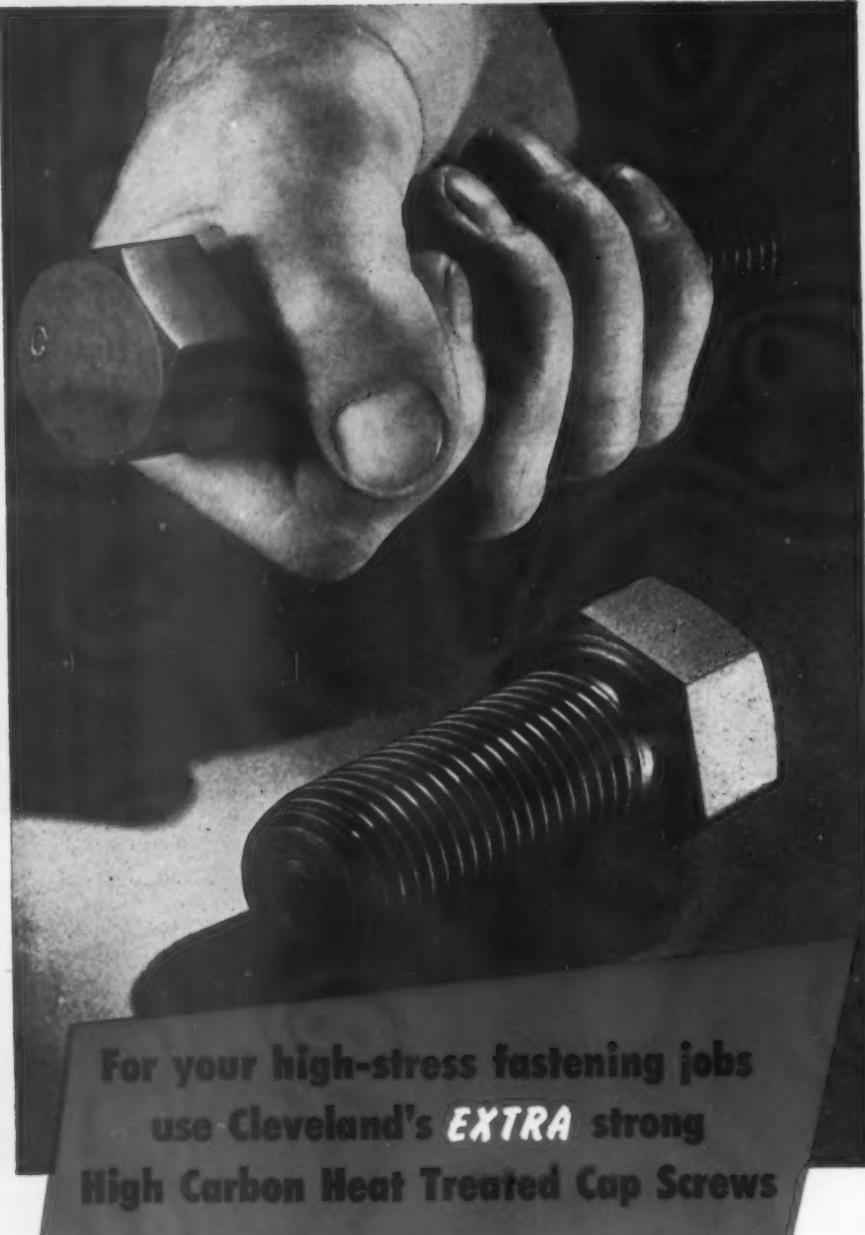
THE IMPERIAL BRASS MFG. CO.

512 South Racine Avenue, Chicago 7, Illinois

Pioneers in Tube Fittings and Tube Working Tools.



IMPERIAL



**For your high-stress fastening jobs
use Cleveland's *EXTRA* strong
High Carbon Heat Treated Cap Screws**

• Popular fasteners of great strength and uniform accuracy, Cleveland's High Carbon Cap Screws are made by the Kaufman Process. This famous *Double Extrusion* method assures more uniform dimensions within the tolerance range in the finished product and creates beneficial changes in the steel's grain flow. Complete range of sizes, diameters from $\frac{1}{4}$ " upward. Write for our monthly stock list for quick help in finding fasteners you need.

THE CLEVELAND CAP SCREW COMPANY
2917 East 79th Street
Warehouses: Chicago, Philadelphia and New York

CLEVELAND
Top Quality
FASTENERS

ORIGINATORS OF THE
KAUFMAN *DOUBLE EXTRUSION* PROCESS
Specialists for more than 30 years in
CAP SCREWS, SET SCREWS, MILLED STUDS
Ask your jobber for Cleveland Fasteners

Robert King has been appointed State Purchasing Agent of South Carolina, with headquarters at Columbia.

Carl R. Roberts has been named Purchasing Manager of the Great Western Sugar Company, Scottsbluff, Nebr.

Gilbert O. Wright has taken over the duties of Purchasing Agent for the State of Idaho, with headquarters at Boise.

Allen G. Chamberlain has been appointed City Purchasing Agent and Personnel Officer of Pueblo, Colo.

Louis Sonnen, manager of the purchasing department of the Tennessee Gas Transmission Company, Houston, Tex., since early 1949 has been elected a vice-president by the board of directors.

Paul A. Juehn has been appointed Purchasing Agent of Ceco Steel Products, Corp., Chicago, Ill.

John Poda has been named Southern Division purchasing representative for the Duplan Corporation, and will have headquarters at Greensboro, N. C.

J. H. Freeman has been named Purchasing Agent for Pan American Pipe Line Company, Houston, Tex.

Russell Loftin has been appointed Purchasing Agent for The Kelley Manufacturing Company, Houston, Tex.

Lawrence C. Gelin has been named Purchasing Agent for Layne-Texas Company, Houston, Tex.

H. W. Loman, for many years Purchasing Agent at Pennsylvania State College, has been named Purchasing Agent at the University of Houston, Houston, Tex. C. F. McElhinney, formerly Business Manager of the University, has been named vice-president of the university.

D. W. Smythe, Assistant Comptroller at DePauw University, Greencastle, Ind., has also been named Purchasing Agent by the board of trustees.

Thomas D. Jolly, Vice President of the Aluminum Company of America, will be one of the principal speakers at the September 28 general session of the Association of Iron and Steel Engineers exposition in Cleveland. Mr. Jolly's subject will be "Engineering and Purchases".

V. H. Thompson has been named Acting City Purchasing Agent of Albuquerque, N. M., to succeed the late John E. Manton.

See Purchasing's
Classified Section
• Page 294

General Electric presents a Simplified Lamp Replacement Plan!

*Reduces maintenance headaches! Cuts costs! Improves appearance!
Gives more light for your money!*

**FREE, INFORMATIVE LITERATURE
NOW AVAILABLE FROM GENERAL ELECTRIC**

GENERAL ELECTRIC's Simplified Lamp Replacement Plan—replacing fluorescent lamps in groups instead of singly—makes lighting maintenance easier and more effective in factories and large office areas.

Companies who have tried it find they reduce the high labor cost of replacing every individual fluorescent tube as it burns out. Instead, all the fluorescent lamps in given sections or departments are replaced near the end of their life, before the great majority are about to burn out. The results: fewer interruptions of office or factory work; a cleaner, brighter lighting system; fewer starter and ballast breakdowns; more light for the money.

The increased life and low cost of G-E fluorescent

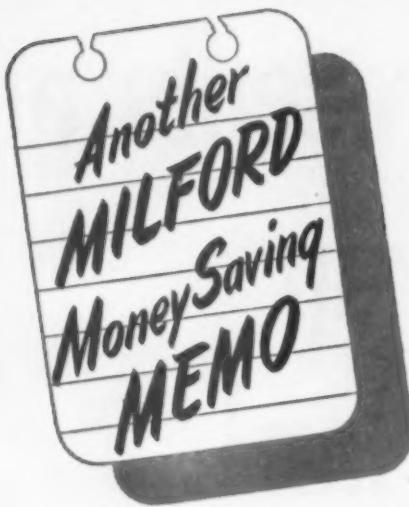
lamps make simplified lamp replacement especially desirable today. In fact, General Electric lamp prices are now so low that the labor cost of changing a single lamp is often greater than the cost of the lamp itself. These factors combine to make Simplified Lamp Replacement practical today in virtually every type of industry.

GET FULL INFORMATION NOW! General Electric has literature available on Simplified Lamp Replacement. It's yours for the asking. And G-E engineers will be glad to help you tailor a Lamp Replacement Plan to meet your individual needs. Write the Lamp Department, General Electric Company, Div. 166-P-9, Nela Park, Cleveland 12, Ohio.



You can put your confidence in—

GENERAL ELECTRIC



MILFORD FLEXIBLE REZISTOR MEANS LONGER BLADE LIFE

Depend on the MILFORD Flexible REZISTOR to deliver its full cutting life without premature breakage — to last up to ten times longer than standard steel blades. The Flexible REZISTOR is shatter-proof — no flying fragments to injure the operator. Exclusive MILFORD Easy-Starting Teeth start the cut on the first stroke at any angle — prevent jamming by keeping the cut free and clear of chips. Teeth are as hard as those of any power blade; the back is tough and flexible. See your nearby MILFORD Distributor about Flexible REZISTORS today!

This booklet tells you more. Get your copy, and literature on the complete line, from your Milford Distributor today. Or, write direct to the factory — TODAY.



THE HENRY G. THOMPSON & SON CO.
Saw Specialists Exclusively For Over 70 Years
NEW HAVEN 5, CONNECTICUT, U.S.A.



Rezistor & Duplex
Hack Saw Blades

Profile and Band Saw Blades
SOLD THROUGH SELECT INDUSTRIAL DISTRIBUTORS

AMONG THE COMPANIES YOU BUY FROM

Boston, Mass.—Holtzer-Cabot, division of National Pneumatic Co., Inc. Charles T. Button has been appointed director of sales. Formerly with Holtzer-Cabot for 18 years as assistant sales manager of the electric motor division, he comes to his new assignment from Howell Electric Motors Co., Howell, Mich., where he was vice-president in charge of sales.

New York, N. Y.—United States Rubber Company. Nils Walter Swenson has been named assistant manager of branch sales for the company's mechanical goods division.

Buffalo, N. Y.—Wickwire Spencer Steel Division of The Colorado Fuel and Iron



Richard H. Frizzell

Corporation. Richard H. Frizzell has been appointed sales manager of the structural products department.

New York, N. Y.—Eutectic Welding Alloys Corporation. F. F. Roehl has been named national sales manager.

Mount Vernon, N. Y.—Ward Leonard Electric Co. W. C. Schofield has been appointed assistant sales manager.

Detroit, Mich.—Taft-Peirce Manufacturing Company. A direct sales office has been opened here in the A.S.T.E. Building, 10700 Puritan Avenue. Raymond F. Jalber, district manager of the Detroit territory, has been assigned to the office.

Chicago, Ill.—Bridgeport Brass Company. Irving M. Malsch has been named Chicago district sales manager. He replaces Carl P. Quanz, who has been promoted to plant manager in charge of all activities at the company's Indianapolis mills.

St. Louis, Mo.—General Electric Company. John J. Miller has been appointed manager of the industrial division of the company's office here.

Chicago, Ill.—Eclipse Fuel Engineering Co. A. A. Englehardt has been appointed district sales representative. New quarters are located at 4209 South Western Avenue.

(Please turn to page 232)

3-Action EXTO The SPECIFIC Product for ROACHES

EXTO was Dodge-developed to provide sure ROACH extermination. It is *not* a DDT preparation — will not scatter roaches.

EXTO WORKS 3 WAYS

1. As a directional contact spray, with sure death in every "direct hit."

2. As a residual spray. EXTO's invisible, odorless spray long retains killing power.

3. As a fumigant in confined spaces.

Your DOLGE Service Man will gladly demonstrate how to apply EXTO for the sure solution of your particular roach problem.

THE C. B. DOLGE CO.
WESTPORT, CONNECTICUT



From his especially designed desk, the Test Supervisor controls the energization of cables under test. It is his job to make certain that all cables meet electrical standards in excess of service requirements.

With specialized equipment electrical conductors are tested for:

How Rome Cable Controls Quality

To you, as a purchaser of wire and cable, dependable high product quality is all important. You have the right to expect that each shipment will be consistently up to specified quality standards. A quick look behind the scenes at Rome Cable will show you why Rome's quality control methods give you that assurance.

"From Bar to Finished Wire" in one plant. Rome maintains complete control over the manufacture of its products. Its test equipment is the very latest and best . . . its control of quality is a basic step-by-step function, stopping only with the satisfaction that the finished product will render dependable and lasting service.

Quality Control at Rome Cable has but one responsibility . . . to see that you receive wires and cables of the highest quality. It is answerable only to top management . . . entirely free from production and sales pressures. It is your assurance of a superior product.

The coupon below will bring you the 40 page bound book, "The Story of Rome Cable Corporation." Send for it today—see for yourself how Rome Cable's controlled quality can make your job easier.

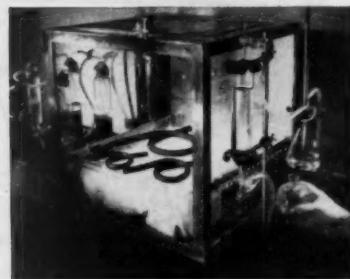
IT COSTS LESS TO BUY THE BEST

ROME CABLE CORPORATION, Dept. P-9, Rome, N. Y.
Please send me a complimentary copy of "The Story of Rome Cable Corporation."

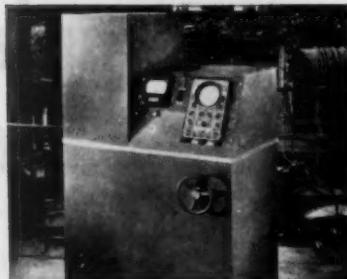
Name..... Title.....

Firm..... Address.....

City..... Zone..... State.....



Ozone resistance



Ionization or corona level



Tensile strength

ROME CABLE
Corporation
ROME - NEW YORK
From Bar to Finished Wire



Complete New Relay Data

Potter & Brumfield's NEW CATALOG No. 109

... a 'must' for your files

Here's complete, up-to-date information on P & B's full line of relay and electro-mechanical assemblies ... a colorful 24 page catalog illustrating standard and special models designed to meet your production requirements.

150 models—for every electrical and electronic application.

MAIL COUPON TODAY
FOR FREE CATALOG!



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233 NORTH MAIN STREET • PRINCETON, INDIANA
EXPORT: 2020 ENGINEERING BLDG., CHICAGO 6, ILL., U.S.A.

NAME _____
COMPANY _____ TITLE _____
ADDRESS _____
CITY _____ STATE _____

Chicago, Ill.—Nickel Cadmium Battery Corporation. Frank Frable, 122 South Michigan Avenue, has been appointed sales representative.

Mertztown, Pa.—Atlas Mineral Products Company. Edison C. Sickman has been appointed general sales coordinator.

Pittsburgh, Pa.—Spang-Chalfant Division of The National Supply Company. J. K. Sutter has been appointed Pittsburgh district manager.

Philadelphia, Pa.—E. F. Houghton & Company. D. J. Richards, vice-president, sales, has been placed in charge of all domestic and foreign sales activities since the recent death of G. W. Pressell, vice-president and director of sales.

Boston, Mass.—Hunt-Spiller Mfg. Corp. Harlow F. St. Pierre, formerly assistant sales manager, has been named manager of the industrial sales division.

Tulsa, Okla.—Alloy Steel Products Company. S. W. Collins, 419 Ritz Building, has been appointed sales representative for Kansas and Oklahoma.

West Orange, N. J.—Thomas A. Edison, Incorporated. Austin Cunningham has been named assistant manager of the Ediphone Division. He succeeds Charles T. Jacobs who was recently made vice-president and manager of the division.

Schenectady, N. Y.—General Electric Company. William E. Herrmann has been appointed manager of sales of the laboratory products section of G.E.'s Special Products Division.

Chicago, Ill.—The Firestone Tire and Rubber Company. J. E. Mitchell has been named western division manager in charge of original equipment sales, with headquarters here.

Detroit, Mich.—Micromatic Hone Corporation. George Eldred has been appointed abrasive sales manager.

Seattle, Wash.—Crucible Steel Company of America. David R. Meslang has been named manager of the company's branch here.

New York, N. Y.—Diamond Alkali Company. J. A. Flobeck has joined the company's New York-New England branch office staff. He was formerly sales manager for Sessions-Gifford Company, Inc., Providence, R. I.

Pittsburgh, Pa.—National Tube Company. William J. McKee, formerly sales manager, Central District, has been appointed general manager of sales. Louis W. Mason, formerly assistant to general manager of sales, has succeeded Mr. McKee.

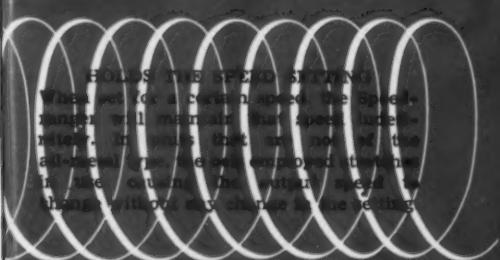
Pittsburgh, Pa.—National Tube Company. H. J. Wallace has been named vice-president in charge of sales, succeeding William F. Connor, who has been elected executive vice-president of the company. (Please turn to page 234)

LUBRICATION IS NO PROBLEM
Since the Speedranger runs in oil, the bearings and all moving parts are lubricated automatically. This is possible only with an all-metal construction.



HOLDS THE SPEED SETTING

When set for a certain speed, the Speedranger will maintain that speed indefinitely. In units that are not of the all-metal type, the oil employed is thin in the cutting, the water used is strong, without any change in the setting.



HIGH SPEED OPERATION
The Speedranger furnishes smooth, stepless operation to as high as 5000 RPM.



On thousands of applications in every field of manufacture, stepless variable speed operation assures exactly the right speed for every operation . . . for every operator . . . the right speeds for each change in the consistency or shape of the material being processed. Such variable speed operation pays off in higher rates of production, a more uniform better quality product and more efficient performance of your equipment and your operators.

Master Speedrangers provide all these advantages inherent to variable speed operation. And in addition their ALL-METAL construction gives you the five additional advantages illustrated on this page . . . advantages that can be obtained only with an all-metal unit.

don't overlook these 5 advantages of

The next time you need a drive for material processing, handling, and conveying equipment; mixers and agitators; welding-positioners; machine tool drives; testing and calibrating equipment . . . to name only a few . . . see what a really remarkable job Master Speedrangers can do for you. Write for Data 7525, new booklet on Speedrangers.

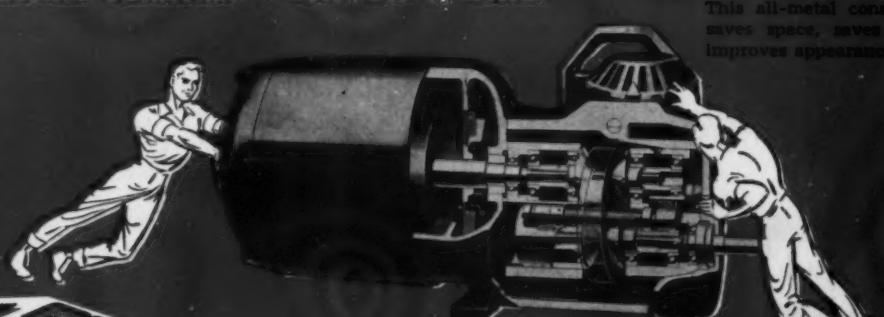
THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO

CUTS MAINTENANCE
The steel-on-steel construction insures longer service than can be expected from units in which less durable parts are used.



ALL METAL CONSTRUCTION

COMPACT DESIGN
This all-metal construction saves space, saves money, improves appearance.



MASTER
SPEEDRANGERS



... KEY TO SAVINGS

Bronze cooling drums, used in making imitation leather. Each drum is double cylinder, with brazed-in bronze spacers and heads. Journals are steel. Coolant is circulated between cylinders by means of flexible hose from journal.

TOUGH...COMPLEX...OR SIMPLE JOB

Shenango qualities pay off!

FOR example, take the rather complex cooling drums shown here. Each drum consists of one cylinder within another, both centrifugally cast by Shenango's advanced technique. This in itself means exceptional strength to resist stresses and pressure . . . and fine, pressure-dense grain for avoidance of porosity and prolonged wear-life. It also means relief from sand inclusions, blow holes and other often-hidden defects.

Add to this Shenango's complete, modern machining facilities and you'll appreciate how simple parts or complex assemblies can be precision finished here to your exact specifications . . . at minimum cost!

FOR FREE BULLETINS, for specific data on ferrous or non-ferrous work, large or small, semi or finish machined, write to:

**SHENANGO-PENN MOLD COMPANY
2489 West Third St. • Dover, Ohio**

Executive Offices: Pittsburgh, Pa.

SHENANGO

ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE® METAL

Cincinnati, O.—Ampco Metal, Inc. Alfred D. Jenss has been named district manager here.

Pittsburgh, Pa.—The Reliable Spring & Wire Forms Company. George H. Herchenrother, 1521 Cooper Avenue, has joined the company as district sales representative for western Pennsylvania.

Akron, O.—Goodyear Tire & Rubber Company. M. W. Sledge has been named to replace the late E. W. Stephen as manager of the Belt Sales Department. Formerly the assistant manager, Mr. Sledge will direct all belt sales activities and will work with C. F. Smith, chief project engineer, on large conveyor belt prospects.

Toledo, O.—Auto-Lite Battery Corporation. Daniel M. Sharpe has been appointed assistant sales manager.

Chicago, Ill.—Hy-Pro Tool Company. Arthur B. Hagan & Associates, 3851 North Hoyne Avenue, has been named direct factory representative.

Newark, N. J.—The Riverside Metal Company. Richard E. Pilling has been assigned to assist F. M. Shelley, Jr., general sales manager at the Newark offices.

Atlanta, Ga.—Chicago Eye Shield Company. Guardian Safety Equipment Company has been appointed distributor of Cesco head and eye protective equipment for Georgia and South Carolina.

Charlotte, N. C.—Reliance Electric & Engineering Company. Frank W. Leitner has been appointed sales engineer for all Reliance products in North and South Carolina.

New York, N. Y.—Catawissa Valve & Fittings Company. Clifford Wood has been appointed Eastern Division manager. He was formerly sales manager of the Jefferson Union Company.

Pittsfield, Mass.—General Electric Company. Willard R. Barrett has been named sales manager for the company's Plastics Division. He was formerly vice-president of the Hoosier Cardinal Corporation.

New York, N. Y.—Panelyte Division, St. Regis Paper Company. Vincent L. Kieran has been appointed sales manager for refrigeration and injection moulded parts.

Akron, O.—The Goodyear Tire & Rubber Company. Karl J. Learey has been named manager of Airfoam sales.

Pittsburgh, Pa.—General Refractories Company. Albert E. Bickell has been appointed assistant district sales manager of the company's office here.

Detroit, Mich.—The Lincoln Electric Company. A. F. Boucher has assumed sales and engineering responsibilities as district manager in this area.

LOOKS right!

Beautifully constructed of gleaming stainless steel, it looks and performs like a thoroughbred.

WORKS right!

Made stronger, lighter and safer and it will give you many years of trouble-free operation.

PRICED right!

You'll be amazed at how inexpensively you can guard against fire with this superior extinguisher.

Kidde's New 2½ Gallon WET CHEMICAL STAINLESS STEEL FIRE EXTINGUISHER

gives you more for your money!

All stainless steel shell means greater strength, lighter weight, safer construction, years of reliable service . . . with the same instantaneous action and sure protection against fire that Kidde has always given. Transparent nozzle lets you see at a glance that nozzle passage is clear. Permanent nameplate with directions can *not* fall off.

Take your choice of clear water, soda-acid or foam type and get all the advantages of Kidde construction and Kidde "know how." Also available in an Anti-Freeze type, made of silicon bronze, which eliminates the danger of corrosion that usually results from the Anti-Freeze solution.

Ask your Kidde Dealer or write us for complete information today.



Walter Kidde & Company, Inc., 947 Main St., Belleville 9, N. J.
In Canada: Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.



Kidde

**LOW
COST**

JOHNSON *Bronze-on-Steel* Bearings

**MAY EXACTLY
FIT YOUR NEEDS**

IF THEY DO, you will make large savings, Bronze-on-Steel bearings are extremely low in cost. They are manufactured by bonding pre-cast bearing bronze powder to strip steel, then forming to the required shapes. This combines an ideal alloy for the bearing surface with the strength and hardness of steel backing. These bearings have a higher Brinell hardness than cast bronze, much greater resistance to pounding and shock, and a comparatively low coefficient of friction. They are widely used in farm implements, in certain automotive applications, and many industrial applications. Perhaps you, too, should explore the possibilities of Johnson Bronze-on-Steel Bearings.

**WRITE TODAY FOR
FULL INFORMATION**



Johnson Bronze
SLEEVE BEARING HEADQUARTERS
.50 SOUTH MILL STREET • NEW CASTLE, PA.

INDUSTRIAL DEVELOPMENTS

The Texas Company has announced the first commercial use extraction unit employing furfural as the solvent and specifically designed for the production of diesel and domestic heating fuels. Widely used by the oil industry for the removal of sludge producing elements in motor oils, the furfural process has been adapted to the new use in a commercial unit operated by the company at its new \$60,-000,000 refinery at Eagle Point, N. J.

The Levinson Steel Company has moved into its own building at South 20th and Wharton Streets, South Side, Pittsburgh, Pa., after more than four decades in the old location.

Pitney-Bowes, Inc., Stamford, Conn., manufacturer of postage meters and mailing machines has announced a \$250,000 building expansion which will add 36,000 square feet of floor space to its plant and general offices.

Turco Products, Inc., Los Angeles, Calif., manufacturer of industrial cleaning compounds, has acquired a large plant in Newark, N. J. It will serve as a manufacturing and laboratory center for the company's Atlantic Division.

Buffalo Bolt Company, Buffalo, N. Y., has changed its name to Buffalo-Eclipse Corporation following the merger into the company of its operating affiliates, the S. M. Jones Company of Toledo, O., The Eclipse Lawn Mower Co. of Prophets-town, Ill., and Penberthy Injector Company of Detroit, Mich.

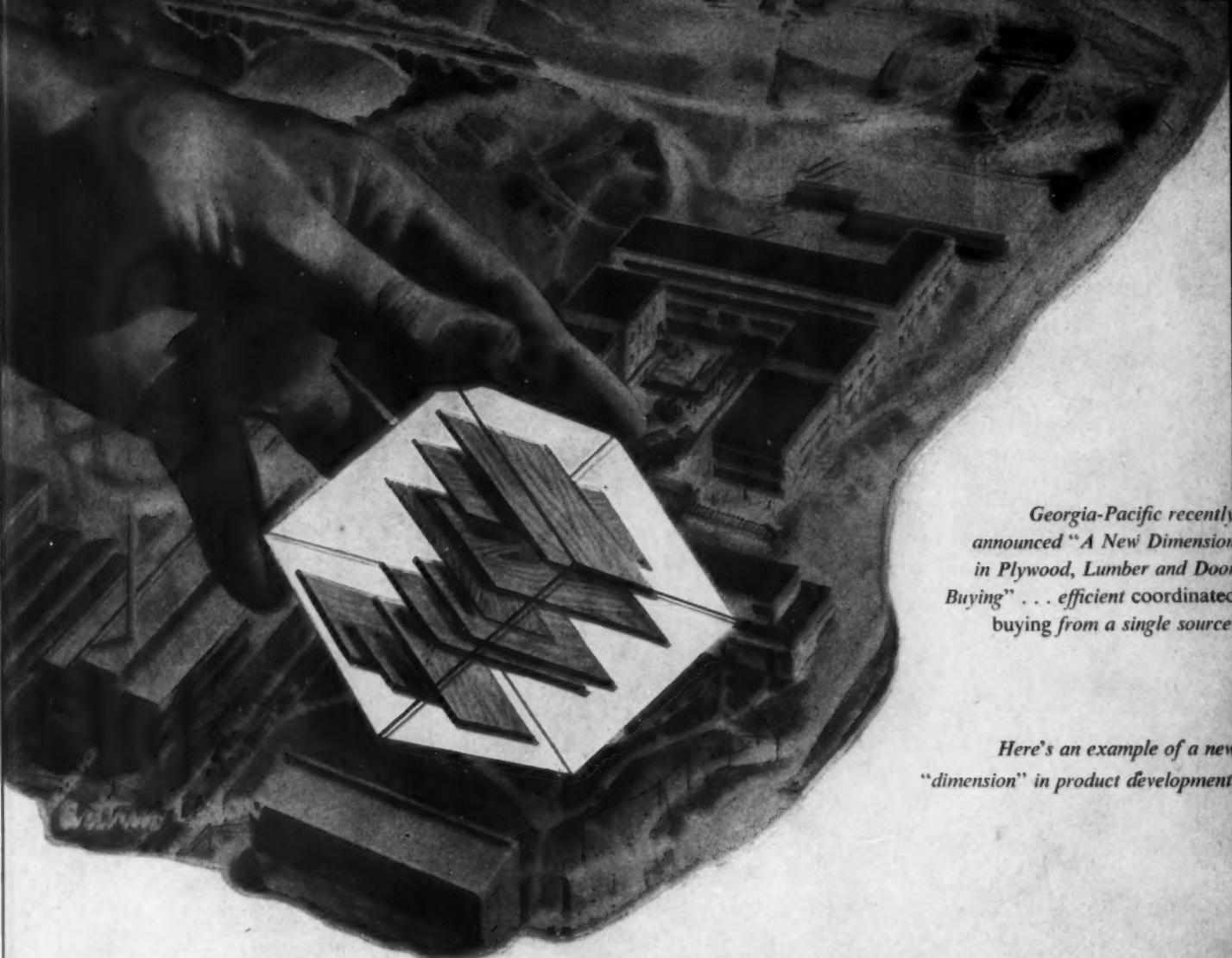
The Babcock & Wilcox Tube Company, Beaver Falls, Pa., has announced an increase in the size range of its seamless steel tubing, following modification of certain of its existing facilities, B & W can now produce seamless hot finished tubing in outside diameters up to 9 $\frac{1}{8}$ " and seamless cold drawn tubing in outside diameters up to 8 $\frac{7}{8}$ ".

Pennsylvania Salt Manufacturing Company is expanding production of its benzene hexachloride by approximately 45% at its plant at Natrona, Pa. The increased production will be available by the end of this year.

Sprague Electric Company, North Adams, Mass., and Philips Industries, Inc., Hartford, Conn., have jointly announced the formation of the Ferroxcube Corporation of America, 50 E. 41st St., New York, N. Y. The corporation will manufacture Ferroxcube, a new ferro-magnetic ferrite.

Food Machinery and Chemical Corporation, San Jose, Calif., has acquired the Propulsion Engine Corporation, Kansas City, Kan., manufacturer of rotary power mowers and two-cycle gasoline utility engines.

(Please turn to page 238)



Georgia-Pacific recently announced "A New Dimension in Plywood, Lumber and Door Buying" . . . efficient coordinated buying from a single source.

Here's an example of a new "dimension" in product development.

Take a seven-league step forward in your thinking about plywood—its properties and uses. Georgia-Pacific's GPX PLASTIC-FACED PLYWOOD is revolutionizing many industrial and construction applications.

GPX PLASTIC-FACED PLYWOOD has an armor-hard, satin-smooth finish. It retains the natural warm beauty and easy workability of wood . . . yet it's so hard, rigid, tough, and durable that you'd be amazed at its cost-cutting record of performance.

Write today and learn how GPX can offer you ways of doing many jobs better at lower cost!

This 20-page booklet, "A New Dimension" and the Problem Analysis Data Form will prove invaluable in re-examining your lumber and plywood needs . . . Send for your copies today. Write Georgia-Pacific Plywood & Lumber Co., 1233 Southern Finance Building, Augusta, Georgia.



GPX . . .

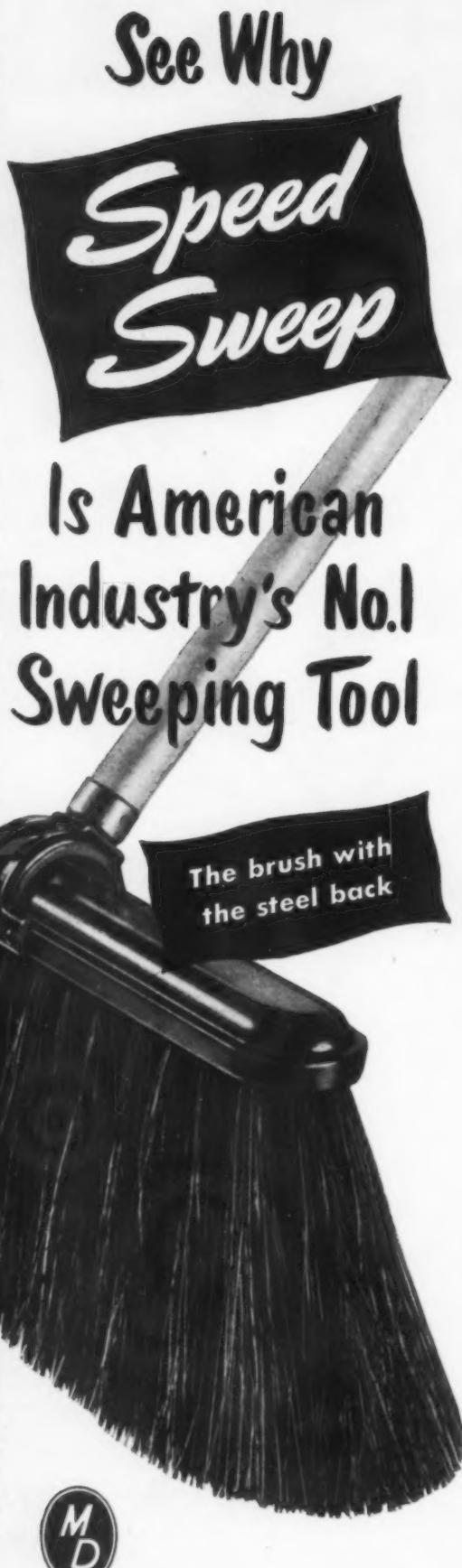
a new "dimension"

in plywood!

GEORGIA-PACIFIC
PLYWOOD & LUMBER CO.

Georgia-Pacific representatives—trained men with wood-engineering "know-how"—are available at any of the offices or warehouses listed below. It will pay you to talk with them.

AUGUSTA—Southern Finance Building, Tel. 2-8383
BOSTON—Castle Island Terminal, Tel. SOuth Boston 8-6540
CHICAGO—332 S. Michigan Avenue, Tel. HArrison 7-5466
OLYMPIA—North Capitol Way, Tel. 4407
PHILADELPHIA—Pier 179 North at Allegheny, Tel. GARfield 3-4501
PORTLAND—Wilcox Building, Tel. BRoadway 3408
PORT NEWARK—Bldg. 101-B So. Dock Street, Tel. MITchell 3-7750



MILWAUKEE DUSTLESS BRUSH CO.
530 N. 22nd Street • Milwaukee 3, Wis.



Tuft arrangement in narrow block provides "spring and snap."

Kirk & Blum Manufacturing Company, Cincinnati, O., dust and fume control manufacturer, has acquired the entire plant and property of The Cincinnati Planer Company.

Farris Stacon Corporation, Palisades Park, N. J., is a new company formed to purchase the Edison Stacon Regulating Valve Division from Thomas A. Edison Incorporated (Instrument Division). The company will carry on the manufacture of the regulator.

Industrial Filter & Pump Manufacturing Company has moved to a newly acquired location at 5900 Ogden Avenue, Chicago 50, Ill.

Affiliated Furnace, Inc., is the new name of the former Affiliated Furnace & Engineering, Inc., Pittsburgh, Pa.

Alexander Milburn, Inc., Baltimore 30, Md., has been incorporated to manufacture and market the well-known Milburn line of oxy-acetylene cutting and welding apparatus, regulators for oxygen, acetylene and other gases, accessories and supplies, and portable carbide lamps.

Wilson Rubber Company, Canton, O., has been granted a exclusive license to manufacture solvent-proof protective gloves made of compar by the process developed and used over the last 13 years by the Resistoflex Corporation, Belleville, N. J.

Inland Steel Company has announced plans to enlarge its steel making capacity to 4,500,000 net tons of ingots annually from its present rating of 3,750,000 tons. The company will construct a new open hearth shop with four 250-ton furnaces. It will be built on land already reclaimed from Lake Michigan beyond present buildings of its Indiana Harbor works in East Chicago, Ind.

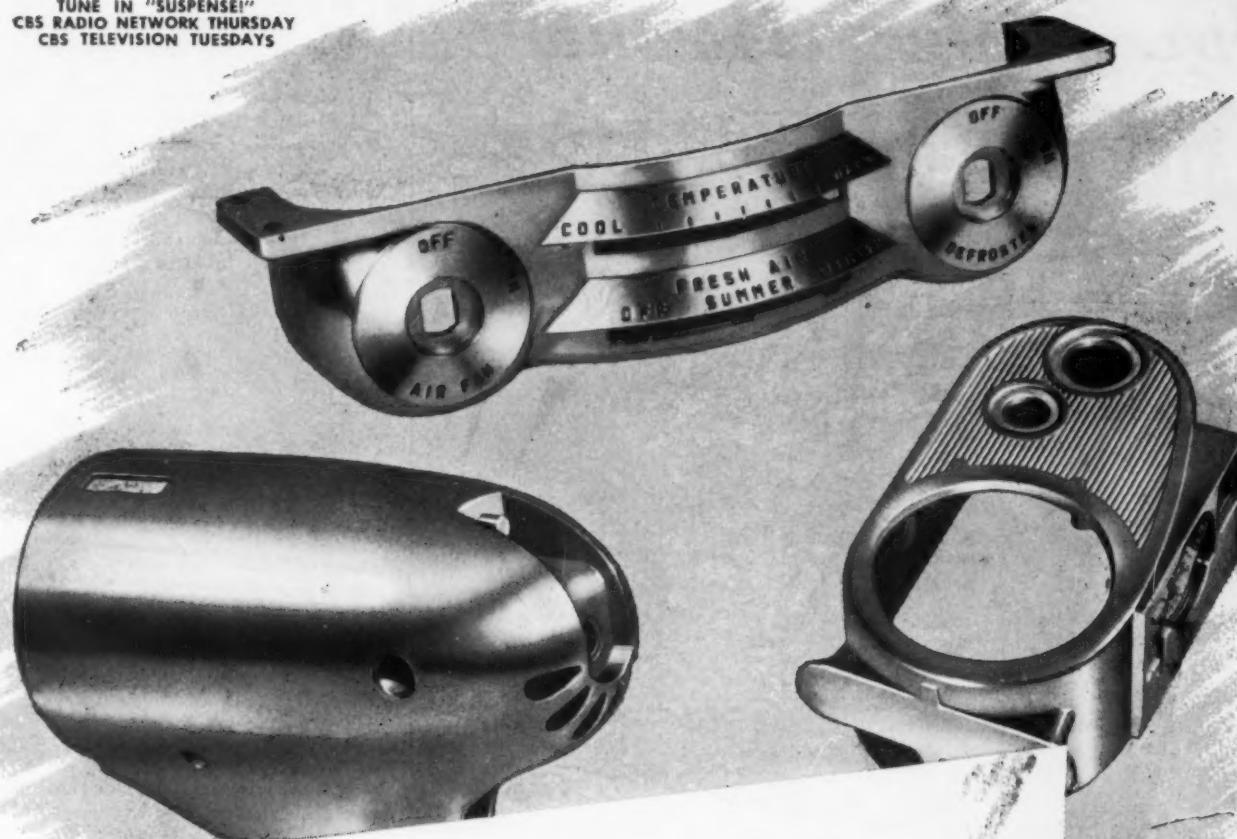
Gulf Oil Corporation has awarded the contract for the construction of a 60,000 barrel per day fluid catalytic cracking unit to The M. W. Kellogg Company of New York, N. Y. The plant will be erected at the company's refinery at Port Arthur, Tex., and the anticipated output will be approximately 20% greater than that of any similar installation currently in operation or under construction by any other firm. The "cat cracker" will produce ingredients for aviation gasoline, materials for synthetic rubber production, high quality automotive gasolines, and fuel oils. It is scheduled for completion during the later summer or early fall of 1951.

Pittsburgh Steamship Company, and Bradley Transportation Company, subsidiaries of the United States Steel Corporation, will build four new ships to augment iron ore and limestone carrying capacity on the Great Lakes.

Barnes Coal Company, subsidiary of The Bird Coal Company, has changed its name to Barnes-Dawson Coal Company, with general offices in Philadelphia, Pa.

(Please turn to page 240)

TUNE IN "SUSPENSE!"
CBS RADIO NETWORK THURSDAY
CBS TELEVISION TUESDAYS



AUTO-LITE

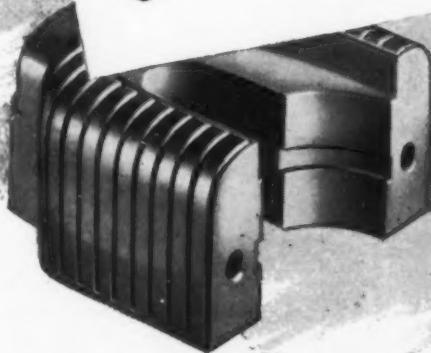
DIE CASTINGS

• Increased production facilities for die castings made possible through the famous Auto-Lite "controlled metals" processes are now available. The opening of the great new Lockland plant of Auto-Lite, combined with the enlarged facilities at Woodstock, Illinois, greatly increases Auto-Lite's ability to furnish high quality die castings.



THE ELECTRIC AUTO-LITE COMPANY
Die Casting Division, Woodstock, Illinois
600 S. Michigan Ave.
Chicago 5, Illinois

723 New Center Blvd.
Detroit 2, Michigan



Inquiries invited

Catalog will be sent on request.
Write on your company letterhead.

For Faster Assembly

ATLAS MACHINE SCREW NUTS



100% Free of BURRS DOUBLE COUNTER SUNK DOUBLE CHAMFERED

Highest standards of Accuracy and Strength. Reduce rejects, build confidence.

HEXAGON STEEL — BRASS — STAINLESS

Coarse and Fine Threads. Standards and Specials. ATLAS NUTS are manufactured, finished, inspected and packed in our own plant in Waterbury, Conn.

Also a full line of Machine Screws, Stove Bolts and Wood Screws.

Free —Send for the new 92 page ATLAS Catalog P.



ATLAS

SCREW & SPECIALTY

450 Broome Street

New York 13, N. Y.

The Kenilworth Steel Company has opened a modern new plant at Kenilworth, N. J., specializing in flat rolled metal products, to serve metropolitan New York, eastern and New England state regions.

Atlantic Steel Company, Atlanta, Ga., has formed a product engineering department with a view to enlarging its market, utilizing idle production and sales facilities, diversifying product lines, and increasing direct services to customers.

Hubbard and Company, Pittsburgh, Pa., has opened a new plant building for the manufacture of aluminum pole line hardware, specialties, and street lighting materials.

Columbia Steel Company, San Francisco, Calif., subsidiary of United States Steel, has leased from the Government the steelmaking facilities of the wartime steel foundry at Pittsburg, Calif., with a capacity of approximately 60,000 tons of ingots yearly.

Dodge Manufacturing Company, Mishawaka, Ind., manufacturer of power transmission machinery, has acquired all of the capital stock of Chicago Thrift Co.

The M. W. Kellogg Company, refinery and chemical engineers of Jersey City and New York, has sold the stock and assets of its subsidiary, The Kellex Corporation, to The Vitro Manufacturing Company.

The Reliable Spring & Wire Company, Cleveland, O., has placed commitments for new machinery and equipment to increase the company's over-all capacity about 20%. The equipment will augment production facilities in the heat treating, grinding, wire forming and wire assembly departments.

The National Radiator Company, Johnstown, Pa., will build a new million-dollar plant in the greater Altoona, Pa., industrial area to meet the requirements of sheet metal operations.

SAFETY CONGRESS AND EXPOSITION TO BE HELD IN CHICAGO

The 38th National Safety Congress and Exposition is scheduled to be held in Chicago, October 16-20. Sessions on Industrial safety will be held in the Stevens, Congress and Morrison hotels. R. L. Forney is general secretary, National Safety Council, 425 No. Michigan Ave., Chicago.

POWER SHOW TO BE HELD IN NEW YORK

The 19th National Exposition of Power and Mechanical Engineering, generally known as the Power Show, is scheduled to be held in Grand Central Palace, New York, November 27 to December 2. It will be held under the auspices of the American Society of Mechanical Engineers in conjunction with the Society's annual meeting at that time.

(Please turn to page 242)



Are you a Tough Customer?

—Hard to Please on **GAUGE**

—Hard Boiled About **TEMPER**

—Fussy About **SURFACE**

Chase sheet brass is carefully checked with both micrometers and an electronic X-ray eye.



Carefully regulated annealing procedures give Chase sheet the right temper and high degree of workability.



Clean flat surfaces with uniform rich colors—that's what you get with Chase sheet brass.



...Then you'll like **CHASE BRASS SHEET**

When you order from Chase, you get sheet, strip or roll in brass, copper and bronze that's uniform in gauge, temper and surface—you get quality metal with accurate widths, straight edges and smooth surfaces. So remember—next time try Chase!

Large orders will be made up to your exact specifications—small orders can often be filled directly from stock by the nation-wide network of Chase warehouses.

Chase

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*the Nation's Headquarters for
BRASS & COPPER*

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK . . . handiest way to buy brass

ALBANY ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT HOUSTON INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER ST. LOUIS SAN FRANCISCO SEATTLE WATERBURY (Sales Office Only)

**For Every Purpose...
For Every Business-**



STAONAL® marking crayons

STAONALS are waterproof and permanent, or washable and removable, as required. Black, white and colors.

- No. 1 and 1 CT SPECIAL—For checking
- No. 2—For general marking and express packages
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- No. 5—For Leather, Fabrics and Miscellaneous
- No. 9—For Dry Lumber
- No. 11—For Rubber
- No. 29—For Green, Wet or Dry Lumber
- No. 295—For Silk, Rayon and Similar Fabrics

SEND TODAY for FREE catalog of industrial crayons to Dept. P50.

BINNEY & SMITH CO.
41 East 42nd St., New York 17, N. Y.



INSTALL HUGE INJECTION MOLDING MACHINE

Huge injection molding machine capable of pressing out at one time thermoplastic products approximately 100 ounces in weight, made by the Watson-Stillman Co., was recently installed at the A. L. Hyde plant, Grenlock, N. J. The machine weighs 115,000 pounds, has nozzle pressure of 21,000 psi, and is operated by 60 hp motor. It is 24' 8" long, 5' wide and 12' 11" high. The side of the platen is 60" x 40". The hopper holds 300 lbs. of plastic raw materials and the clamping capacity is 1000 tons.

1 1 1

ELECTRIC FAN COVERS



A more extensive line of electric fan covers is now being marketed by Budlew Products, 20 E. Jackson Blvd., Chicago 4, Ill. They are now available for the following size fans: 8", 10", 12", 14", 16", 18", 20", 24", 26", 30", 35" Air Flight circulators and for all models of the Vornado fan.

The covers are designed to provide maximum protection against dirt and dust for idle fans, or fans in storage. They are fabricated of .004" translucent Vinylite plastic and are water-proof, dust-proof, crack-proof and flame-proof. Further information and sample may be obtained from manufacturer.

1 1 1

NEW SERIES OF PLANT POSTERS ON SAFETY GOGGLES

Safety glasses, not personal glasses, should be worn on the job by workers, is the theme of a new series of 10" x 13½" posters being released by American Optical Company, Southbridge, Mass.

Designed to encourage workers to wear goggles, the posters point out that Rx safety glasses protect workers' eyes whereas personal glasses do not. In addition, personal glasses should not be exposed to hazards that may chip, crack or pit the lenses.

Industrial concerns desiring to receive these posters may obtain them by contacting the nearest American Optical branch office.

(Please turn to page 246)

WILL YOUR NAME BE REMEMBERED?

GITS Quality Plastic Products

Cement friendship and esteem—to bring a warm glow of remembrance! The cost is small . . . the value high!

GITS "Super Right Angle" Unbreakable Plastic FLASHLIGHT—

one of the famous "Mile of Light" Flashlights. Nickel plated brass, lacquered, perfect parabolic reflector gives a strong beam of pre-focused light. 3-way "ON-OFF" and signaling switch always works. Transparent or lustrous colored case.



GITS MOLDING CORP.
4640 W. HURON STREET, CHICAGO 44, ILL.

Gentlemen:

Please send me at once sample of the item I have checked below and prices in quantity. With imprint

Plain "Plastic Eye" Flashlight "Plastic Eye Jr." Flashlight "Super Right Angle" Flashlight "One-Hand" Knife Razor-Nife and Key Chain Letter Opener Nail File Thimble Stir Stix

- Bracelet Key Holder
- Shoe Horn
- Key Tag
- Match Pac
- Par-Kit
- The items you illustrate do not fully satisfy my needs, so please send me your complete catalog and full information. (PLEASE PRINT)

NAME TITLE
COMPANY
ADDRESS ZONE STATE



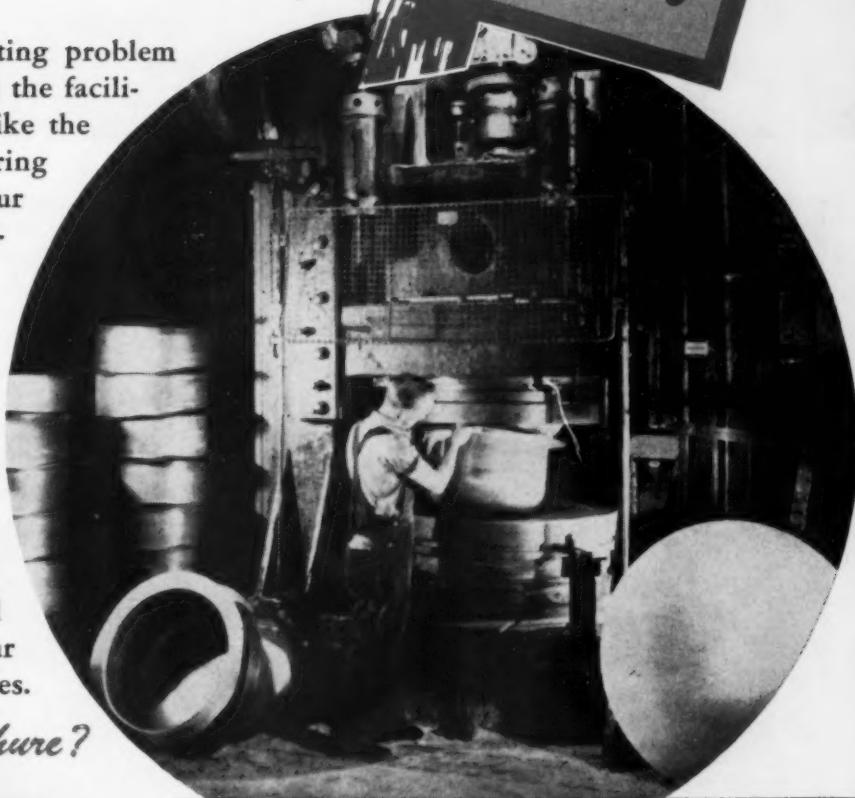
**ENGINEERING SKILL
and
FACTORY FACILITIES
FOR HIRE!**

- Have you a metal-fabricating problem that's outside your field or beyond the facilities of your plant? Would you like the help of expert, experienced engineering and designing skill to develop your idea into a finished product, or improve an old product?

Geuder, Paeschke & Frey Co. is equipped to develop and produce items in sheet steel or aluminum, ranging from fruit juicers to enameled washing machine tubs and automobile parts... doing all or part of the work from drafting board to fabrication and finishing. Manufacturers, large and small, find it profitable to take advantage of our overall service and extensive facilities.

May we send you this Brochure?

It's illustrated with big, clear pictures of dozens of production jobs for G.P.&F. customers—also data on our facilities at your service. Book fits your files—and belongs in them. Write today for your copy of "SCIENCE and SKILL IN SHEET METALS."



We have modern equipment and the know-how for:

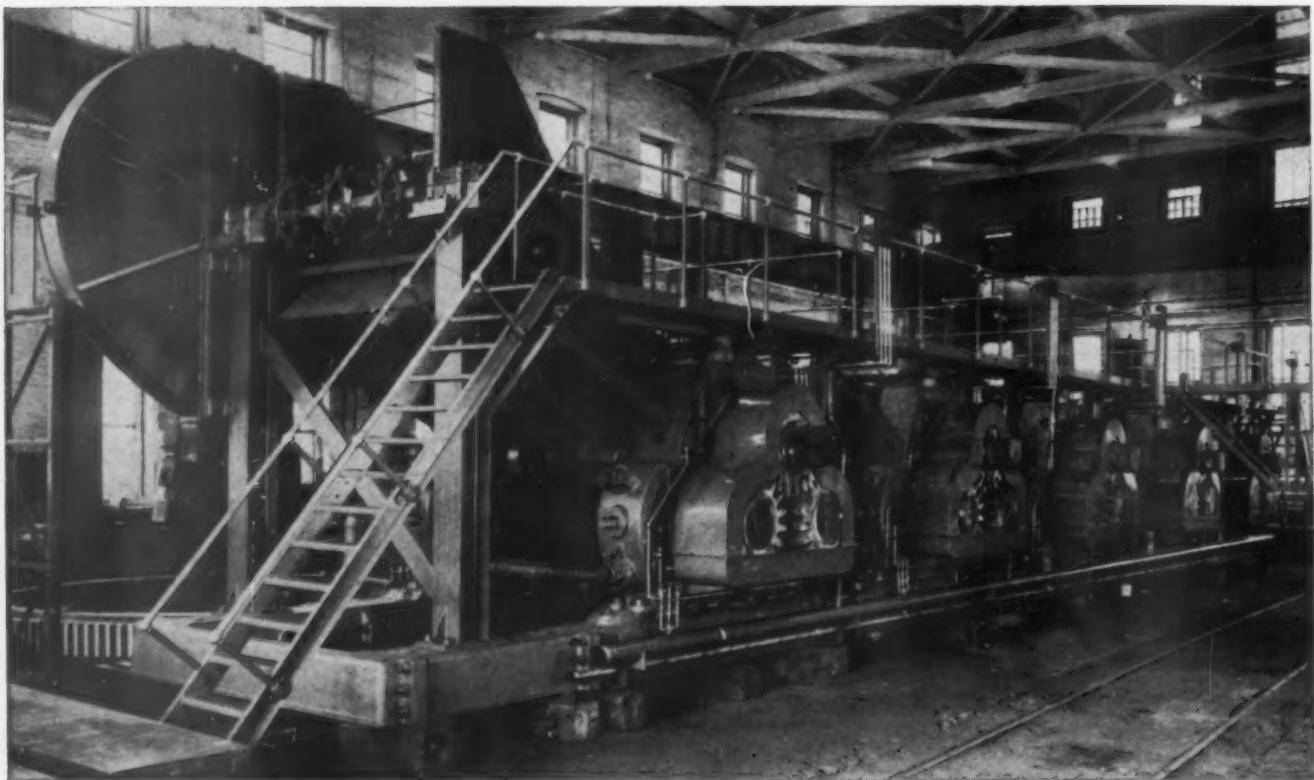
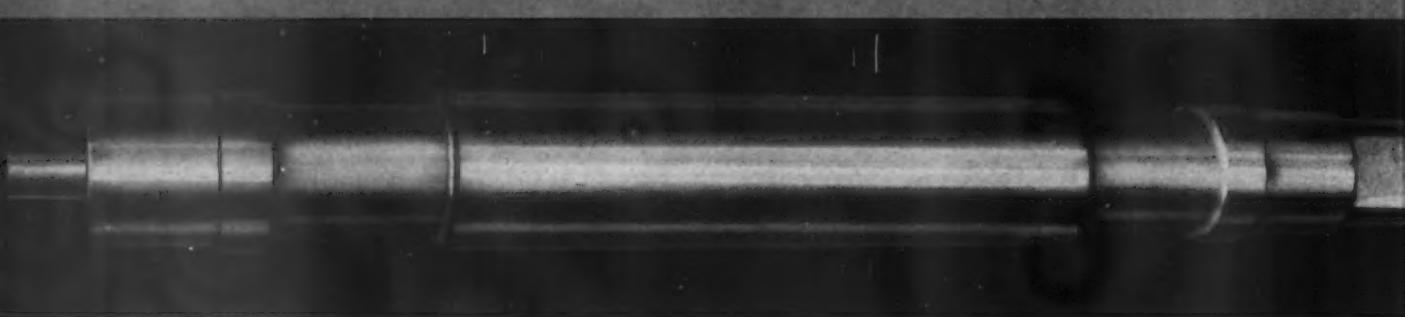
- DESIGNING
- ENGINEERING
- STAMPING
- DRAWING
- FORMING
- TINNING
- GALVANIZING
- LEAD COATING
- WELDING
- SPRAY FINISHING
- VITREOUS ENAMELING

A complete machine shop and tool and die department.

GEUDER, PAESCHKE & FREY CO., 1520 W. St. Paul Ave., Milwaukee 3, Wis.

STANDARD ROLLS

do a "Sweet Job" here..



NOTICE—DESIGN AND PURCHASING DEPARTMENTS

Standard Steel Works Division is equipped to produce all varieties of forged rolls, up to 25 tons in weight, that can be formed under a press or hammer.

Rolls can be specified rough; semi-finished; or finished machined. Facilities permit the turning of cylindrical parts up to 50 feet in length.

STANDARDIZE ON STANDARD FOR

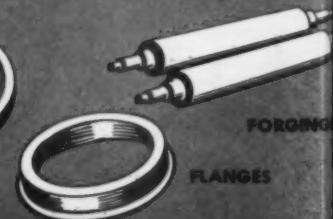


WHEEL MILL PRODUCTS

STEEL CASTINGS



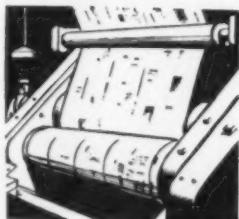
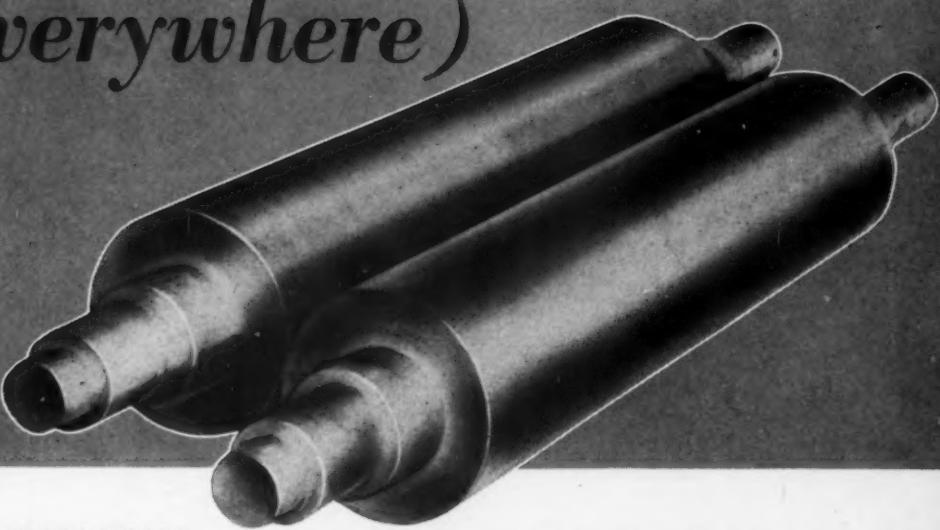
WELDLESS RINGS



FORGINGS

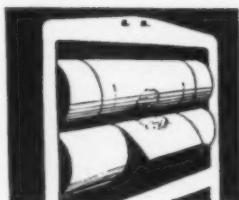
FLANGES

e....(and Everywhere)



PRINTING PRESS ROLLS

The dual need for complete reliability and extreme precision in rolls for modern high-speed printing presses is adequately met by Standard products. They are making news on the presses of publishers throughout the country.



ENGRAVING ROLLS

Engraving rolls must have a flawless surface to take the design . . . and unusual wear-resisting qualities to retain it. The close control that safeguards every step in the production of Standard Rolls fits them to meet the severe requirements of this service.



PAPER MILL ROLLS

The finish on the web of paper that spins out of giant paper-making machines depends to a large extent on the finish on the roll. Standard's method of manufacture produces the homogeneous structure that permits development of a mirror-smooth surface.

If the equipment you build, or the equipment you operate, demands rolls with unusual strength or stamina—why not check up on what Standard has to offer? We make our own steel in acid open-hearth furnaces (which are among the largest tilting-type units in the country) and so can control analysis and quality right from the start. Our forging equipment permits thorough working of pieces up to 25 tons in weight. And our complete, modern heat-treating facilities can supply an important "plus" to the desirable properties of the roll.

The sugar mill illustrated is just one of the examples of heavy-duty equipment that can perform to capacity because of the dependability of Standard Rolls.

The Baldwin Locomotive Works, Standard Steel Works Division, Burnham, Pa., U. S. A. Offices: Chicago, Cleveland, Houston, New York, Pittsburgh, San Francisco, St. Louis, Washington.



BALDWIN

STANDARD STEEL WORKS, DIVISION

NEW TAPE GETS GREATER STRENGTH, FLEXIBILITY - FROM GLASS...



HEAVY INSULATED CABLE ROLLS ARE BOUND QUICKLY, SAFELY, SECURELY. **PERMACEL-15** STICKS INSTANTLY - WILL NOT HARM INSULATION.

UNIQUE CONSTRUCTION OF PERMACEL-15: SURPRISINGLY STRONG, FINE SPUN GLASS THREADS ARE SEALED TO TOUGH KRAFT BACKING WITH ADHESIVE COATING. SAFE, FLEXIBLE - SUPPORTS 175 LBS. PER INCH WIDTH.



FREE illustrated booklet shows how tape can help in your business!

Twelve pages of facts and pictures! Write today - on your business letterhead, please - to Dept. 4S at the address below for your copy.

PERMACEL offers a complete line of laboratory-developed, job-tested industrial tapes.

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INDUSTRIAL TAPE CORPORATION • NEW BRUNSWICK, N. J.

HEAT SEAL BAG TOP LABEL PAPER

Fast-setting, hot strength adhesive that will not squeeze out between the jaws or rollers of bag top labeling machines is announced by the Nashua Gummed and Coated Paper Co., Nashua, N. H. The new thermo-adhesive is known as Imac BT, and is available on 60# Kromekote, 60# CIS White Litho, and 65# Kromekote Cover stock (65#—20x26-500). Properties of the new label paper include (1) quick set over a wide temperature range; (2) no squeeze-out of adhesive between jaws or rollers on bag sealing machines; (3) competitive cost; (4) immediate adherence to a wide variety of films and other bag making materials; (5) viscous and tacky at the high temperatures required to seal multiwall bags; (6) excellent printing qualities; (7) good storage and handling characteristics.

Special bulletin is available describing the new product and its application.

MOISTURE-FREE PACKAGING FOR CUT-OFF WHEELS



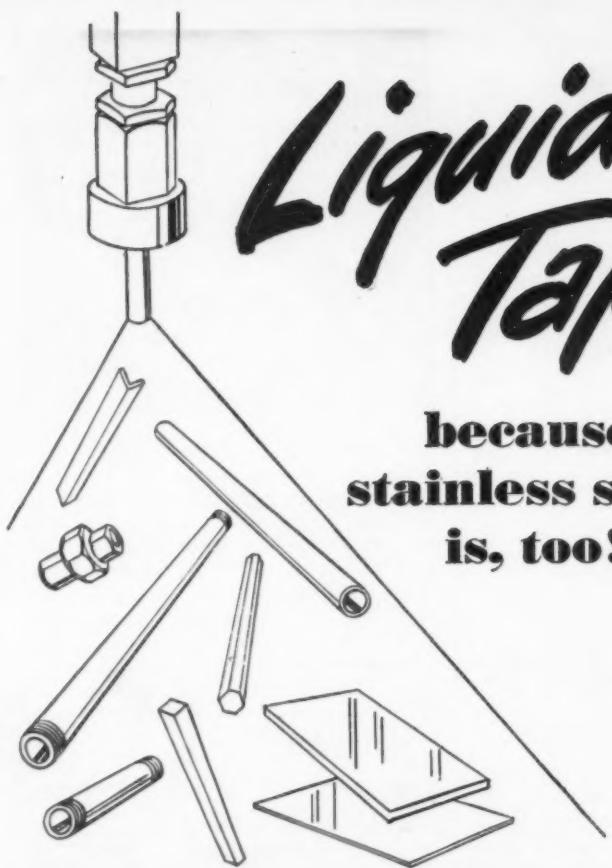
Grinding wheels are extremely susceptible to changes in humidity, judging from the results of recent tests by the Chicago Wheel & Manufacturing Co., Chicago, with the assistance of its package manufacturer.

Cut-off wheels, according to the company, used by the metal working trades for high speed cutting of such products as pipe and tubing, are critically affected by exposure to moisture. The bonding post holding the abrasive particles to the wheel loosens incident to the action of the moisture. It was felt that a more positive barrier than ordinary kraft paper was needed to assure longer wheel life. The glassine, heat-sealed envelope seemed like the answer to the problem of adequate protection against moisture.

Two sample cut-off wheels were used in the tests, one a coarse grade and the other a fine grade. The wheels were broken into pieces and then oven dried for two hours at 100 deg. C. Half of the pieces were enclosed in small glassine envelopes which were placed in atmospheres of 50% and 90% relative humidity, together with uncovered samples.

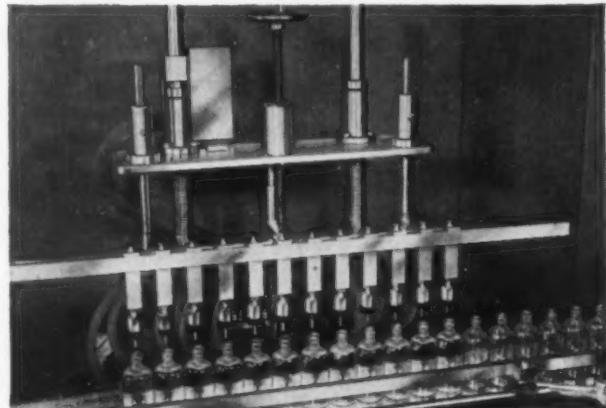
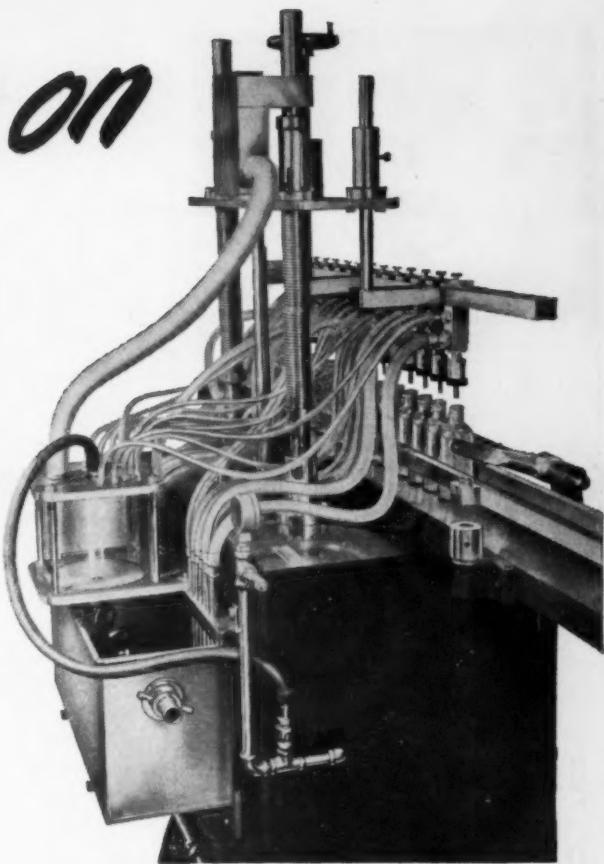
Differences in weight were checked periodically during the tests. In the 50%

(Please turn to page 248)



Liquids on Tap

because
stainless steel
is, too!



FRASSE

for
STAINLESS STEELS
AND TUBING

**Write for NEW DATA on
E. L. C. STAINLESS STEELS**

A new Frasse Engineering Memorandum on the "Resistance to Sensitization of Extra Low Carbon Stainless Steels" is now available. Shows results of comparative tests on types 302, 304, 316, 321, 347, and 304 ELC for corrosion immunity after welding. Send the coupon for your free copy, today.



Chemical, cosmetic, and other manufacturers are now using this ingenious, all-stainless filling machine for high speed precision packaging of their liquid products.

It fills containers with any type of fluid—free flowing, viscous, or foaming—through a battery of automatic valves actuated by a single foot pedal operation.

The nature of each liquid to be filled requires that every machine be custom built, normally a headache in materials procurement. The illustrated machine, for instance, uses stainless steel nipples, unions, plates, sheets, angles, rounds, flats, squares, hexes, screws, nuts, seamless tube, and pipe.

The manufacturer of this unit, however, has simplified his problem by standardizing on stainless steels from Frasse warehouse . . . and by relying for selection of the correct types on Frasse engineering service. In just the quantities and exactly the analyses needed, he gets his requirements immediately from Frasse stocks.

You're invited, too, to make Frasse your inventory headquarters for stainless steel. Frasse stainless stocks include every rolled form . . . sheets, strip, bars, tubes, pipe, and specialties . . . in a wide range of sizes and analyses. For immediate stainless service, call Peter A. FRASSE and Co., Inc., 17 Grand St., New York 13, N.Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange St., Buffalo 3, N.Y. (Washington 2000) • 157 Richmond Ave., Syracuse 4, N.Y. (Syracuse 3-4123) • Jersey City • Hartford • Rochester • Baltimore

COURTESY OF PERL MACHINE MFG. CO.

PETER A. FRASSE & CO., INC.
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58A

Please send me a complimentary copy of your
Memorandum No. 5 on ELC Stainless Steels.

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**Do you pay more than
the price for fasteners?
...you can pay much less!**

The first cost of a fastener is low when compared to the cost of your product.

But—first cost of an inferior fastener isn't final cost in terms of assembly time.

A cheap fastener may cost more than you can afford. That's why it pays to buy good fasteners.

**Scovill Makes
Good Fasteners**

Recessed Head Screws • Sems
Tapping Screws • Standard
Machine Screws • Special Cold
Headed Parts



SCOVILL FASTENERS
Industrial Fastener Sales, Waterville Division
Scovill Manufacturing Co., Waterville 14, Conn.

Montclair, N.J. • Detroit • Wheaton, Ill.
Los Angeles • Cleveland • San Francisco

(Continued from page 246)

R. H. atmosphere, the samples were allowed to remain for two weeks. The moisture pick-up for the coarse grade samples was decreased 29% and the fine grade samples 17% by the use of the heat sealed glassine container.

A similar set of samples was maintained for a month under the more extreme condition of 90% R. H. In this case the moisture pick-up, because of the package, was decreased 38% on the coarse grade, 60% on the fine grade.

The tests show that cut-off wheels can be protected against deteriorating atmospheric conditions until ready for use, and that it is possible to stock these wheels indefinitely without the loss of cutting efficiency while they are on the shelf. The transparent packaging also provides positive, instant wheel identification.

1 1 1

**NATIONAL CARBON ANNOUNCES
STANDARD CARBON BRUSHES**

New methods of merchandising carbon brushes is announced by the National Carbon Divn., Union Carbide and Carbon Corp., 100 E. 42nd St., New York, N. Y., in the establishment of "National" Carbon Standard Brushes. The new plan is said to insure a better selling price and also an adequate stock at all times for prompt shipment.

The Standard brushes in the list include some of the most popular items for Diesel-electric locomotive service; P.C.C. car motors; Westinghouse SK motors and generators; Westinghouse motors and generators having tandem holder, and General Electric CD motors and generators.

These Standard brushes, to be sold at a flat price, are those in such demand that they can be produced in large quantities, packed in standard packages at the same price per brush regardless of the quantity purchased, provided they are purchased in Standard package quantities or multiples thereof. The packages, in lots of 50, 100 and 250 brushes dependent upon type of brush, are designed for convenient handling in stores and shipments.

1 1 1

PRINTED POLYETHYLENE BAGS

With the addition of new machinery in its factory at Minneapolis, Bemis Bro. Bag Co. is now offering color-printed polyethylene bags in a wide variety of shapes and sizes. Brand printing is available in one to four colors.

Bemis also produces polyethylene-line kraft paper bags at its Paper Specialty Plant in St. Louis, multiwall paper bags with a polyethylene-coated ply at its various multiwall bag plants, and polyethylene laminated textile bags, both cotton and burlap, are made in the Water-proof Departments at Brooklyn and St. Louis.

(Please turn to page 250)



LOCKED IN STRENGTH of Tri-Lok open steel flooring gives efficient load distribution, even on long spans. Get maximum strength, light, and air with minimum weight. Available in Rectangular, Diagonal, and Super-Safety U-type Flooring, and Stair Treads of all kinds.

The Tri-Lok Company is also equipped to furnish riveted and Tri-Forge welded open steel flooring. Tri-Lok grating can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc. Write for Bulletin MX1140.

DRAVO CORPORATION

National Distributor for the
Tri-Lok Company

Dravo Bldg., Pittsburgh 22, Pa.

Sales Representatives
in Principal Cities



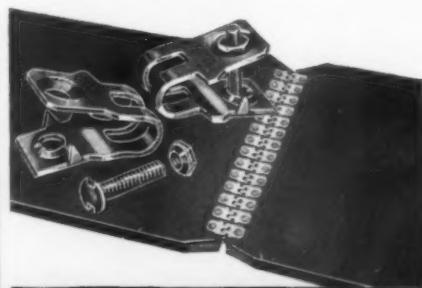
**HINGED PLATEGRIP
BELT FASTENER No. 500**

**For Heavy Conveyor Belts
of changing length**

These heavy-duty belt fasteners make a strong, flexible joint in conveyor belts, belts of any width and of from $\frac{3}{8}$ " to $\frac{1}{2}$ " thickness. They offer special advantages in mines, quarries or industrial set-ups where length or position of belt is frequently changed, because sections can be removed or added at will. Joints are opened for this purpose by simply pulling out the hinge pin.

Easily and quickly applied on the job or in the shop. Special design gives deep compression into belting and smooth, flush joint.

Write for Circular



ARMSTRONG-BRAY & CO.
5394 Northwest Highway, CHICAGO 30, U.S.A.



RELIANCE
Precision-Built
MOTORS

DEPENDABLE POWER LONGER
for every application
from 3/4 to 300 horsepower!



RELIANCE Protected Open A-C MOTOR

The Reliance range of PRECISION-BUILT A-c. Motors—3/4 to 300 horsepower—covers all standard speeds on two and three-phase circuits, for domestic and foreign frequencies and voltages. All standard enclosures and a wide choice of mechanical designs and special mountings are available.

It will pay you to see the many extra precision steps Reliance takes in making these motors different and *better*—to give you dependable power *longer*. Your nearest Reliance Representative can show you these steps. And for a digest of the information you should have to select the right A-c. motor for any job, let us send Bulletin B-2101.

Sales Representatives in Principal Cities

RELIANCE ELECTRIC AND
ENGINEERING CO.

"All Motors are NOT Alike" • 1056 Ivanhoe Road, Cleveland 10, Ohio



ASK US TO QUOTE ON Name Plates

Send us your designs and specifications. Or, if you wish, our Art Department is available to help in preparing distinctive name plates for your products. We will gladly quote on your requirements, without obligation. Etched or lithographed on metal, Ecoa name plates are permanent marks of distinction which reflect quality and add sales appeal to your product. They look better—longer.

THIS BOOK CAN SAVE YOU MONEY

By choosing from nearly 5000 shapes and sizes for which we have dies on hand you can save the cost of special dies. Your design and engineering departments will get real money-saving ideas from this book. Write for your copy now on your letterhead.



ETCHING COMPANY OF AMERICA

1520 Montana St., Chicago 14, Ill., Dept. C-9

Metal Name Plates, Dials and Panels, Etched or Lithographed • Etched Metal Scales, Clock Dials, Trophy Plates, Plaques, Art Novelties, Advertising Specialties • Etched Metal Panels for elevator and architectural uses • Lithographed or Screened Plastic Name Plates or Dials.

G. E. TO ENLARGE TAUNTON, MASS. PLASTICS OPERATION

The General Electric Company is about to launch a one-million dollar improvement program to make the Taunton, Mass., plant of its Plastics Division one of the largest plastics operations in the country, according to an announcement by Herbert M. Brusman, manager of the Plastics Division.

Plans are being made to alter nearly all interior sections of the Taunton Plant and to modernize equipment for maximum production efficiency. Presses with the newest and fastest controls now known to the plastics industry will be added. The program is scheduled for completion about the end of 1950.



TOOL STEEL SELECTOR CHART AVAILABLE FROM CRUCIBLE STEEL

A Tool Steel Selector in the form of a 9-inch circular chart designed for shop and office use, characterized as the "desk drawer metallurgist", is available from the Crucible Steel Company, 405 Lexington Avenue, New York, N. Y., or any of its branch offices.



The Tool Steel Selector is based on 22 readily obtainable tool steels which meet requirements of 95 to 98 percent of all tool steel applications

Over two years of developmental work proved the new technique involved before it was incorporated in the chart which is based on 22 readily obtainable tool steels, which, it is stated meet the requirements of 95 to 98 percent of all tool steel applications.

The new selection method was developed primarily to take the guesswork out of tool steel selection, according to Hugo Beck, Crucible Steel metallurgical engineer. Under trial and error selection methods, a piece of tool steel costing from \$10 to \$25 may have \$1000 to \$2500 worth of labor expended on it before some unsuspected characteristic proves it a bad choice and causes it to be scrapped.

Without an accurate selection guide, shops often buy tool steel for a job they
(Please turn to page 252)

Eaton Permanent Mold Gray Iron Castings



for
**AUTOMOTIVE
APPLICATIONS**

- Free machinability
- Dense, non-porous structure
- Uniform structure throughout the casting
- Freedom from leakage under pressure
- Machines to high, mirror-like finish
- Properly annealed; no growth or distortion after machining

Send for your copy of the illustrated booklet, "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings."

EATON MANUFACTURING COMPANY
CLEVELAND, OHIO
FOUNDRY DIVISION: 9771 FRENCH ROAD • DETROIT 13, MICHIGAN



PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings • Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

**the
most important
Question
about Chain:**

WHO MAKES IT?...



Whether you buy chain for your own use

or as part of your product, you want to know that it is good, strong, dependable, high quality chain. And the best way to be sure of that is to know who made it.

Nothing will ever lower the quality of ACCO Welded Chain, Weldless Chain, or Attachments. Our research department is constantly endeavoring to improve the quality of American Chain, thereby increasing its service to the user.

Buy AMERICAN
... the complete chain line

ACCO

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York,
Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

In Business for Your Safety

(Continued from page 250)

believe requires high hardness, only to have the steel break, he said. Then tougher steels of lower hardness are tried until the desired balance of properties is discovered. When a tough steel, lacking sufficient hardness is tried, the same losses in material and time are experienced until the right steel is found.

The Selector Chart selection method is based on the practices used by metallurgists to choose the right steel, and selection is reduced to quick single steps. Obviously, when it is desired to select a tool steel by this method, the type and condition of the material to be worked, number of pieces to be made, method of working (hot or cold), and the condition of the equipment to be used should be known, Mr. Beck stated.

STEEL-STAPPING DISPENSER

Illustration shows mobile strapping dispenser developed by Signode Steel Strapping Co., 2600 N. Western Ave., Chicago, Ill. Feature styled the "Straptroller" keeps the flow of strapping under control at all times, without backlash and without



New dispenser keeps flow of strapping under control.

interference from too much slack. Dispenser cannot roll in the direction of the pull of the strap because the strap is dispensed at right angles to the wheels. Dispenser is reloaded lying down, full reels of strapping being easily set in place. The dispenser may be used in vertical or horizontal position.

1950 CANADIAN TRADE INDEX

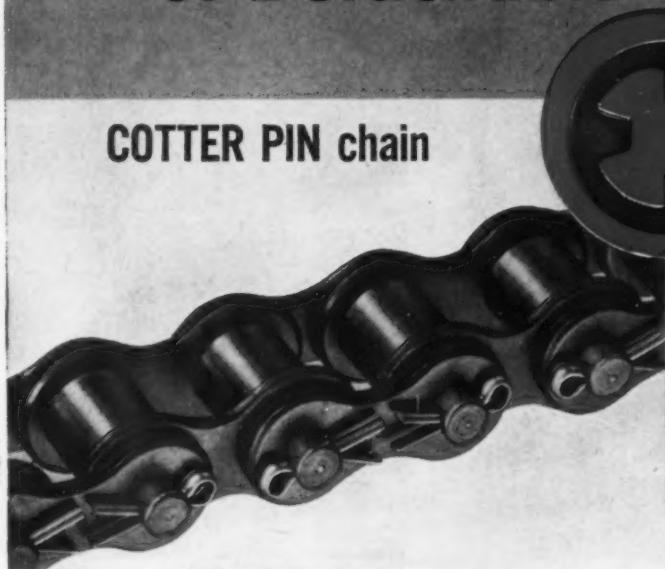
The Canadian Manufacturers' Association, 67 Yonge Street, Toronto 1, Ont., Can., recently announced publication of the 1950 Edition Canadian Trade Index. It includes an alphabetical list of approximately 10,000 manufacturing firms, with addresses, branches, brands and trade names, cable address and foreign representatives, and a classified list (10,000 classifications) of industrial products and the names of firms manufacturing them. Newfoundland manufacturers are now listed.

The price of the directory is \$7.50—postpaid.

(Please turn to page 254)

Truarc E-Rings Improve Performance of Detachable Chain...5 ways!

COTTER PIN chain



TRUARC RING chain



In every possible kind of test—tensile, impact, shock, speed—detachable chain made with Truarc Rings outperforms chain equipped with cotter pins! That's what Atlas Chain & Manufacturing Co., Philadelphia, discovered, after pioneering chain with Truarc E-Rings.

Improve your own product with Truarc Rings! Wherever you use machined shoulders, collars, cotter pins, bolts, nuts, screws, snap rings...a Truarc Ring will do the job better: improve performance, cut unit cost, save space and weight, eliminate parts, permit use of stock sizes, eliminate skilled labor operations, simplify maintenance.

Truarc Rings are precision-engineered. Quick and easy to assemble, disassemble. Give a never-failing grip. Can be used over and over again.

Find out what Truarc Rings can do for you. Send your blueprints to Waldes Truarc engineers, for individual attention, without obligation.

Waldes Truarc Retaining Rings are available for immediate delivery from leading ball bearing distributors throughout the country.

1. STRONGER. Average 30% higher static thrust strength than cotter pins. Resilient E-Ring reinforces links against exceptional side stress—resilient spring is most efficient means of damping vibration.

2. GREATER SHOCK RESISTANCE. Higher shock strength ratios than cotter pins, due to greater contact surface plus spring reaction for damping moment of shock. Circular movement of ring in groove relieves shock surface loadings—instead of resisting rigidly as with cotter pins in fixed holes.

3. HIGH SHOULDER. High effective bearing shoulder extends practically all around pin, and is geometrically perfectly proportioned to link diameter.

4. RE-USABLE. No part of E-Ring fatigues and breaks off, as with ends of re-used cotter pins. Ring removes easily with screwdriver.

5. REDUCES ACCIDENTS. Does not protrude to catch onto clothing. No sharp-pointed ends to produce electrical brush discharge and resultant fire and explosion hazard in mines and mills.

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**WALDES
TRUARC**
REG. U. S. PAT. OFF.

RETAINING RINGS

WALDES KOHINOOR, INC., LONG ISLAND CITY 1, NEW YORK
WALDES TRUARC RETAINING RINGS ARE PROTECTED BY THE FOLLOWING PATENT NUMBERS: U. S. PAT. 2,382,948;
2,420,921; 2,411,761; 2,487,803; 2,487,802; 2,481,306 AND OTHER PATS. PEND.



Waldes Kohinoor, Inc., 47-16 Austel Place
Long Island City 1, N. Y.

P092

Please send the new catalog on
Waldes Truarc Retaining Rings.

Name _____

Title _____

Company _____

Business Address _____

City _____ Zone _____ State _____ ★



Huge Rotary Kiln in the Jacksonville, Florida, paper mill of the **NATIONAL CONTAINER CORPORATION**



"We use This Lubricant on big, hot, heavy bearings, too!"

Following is an extract from a lubrication report made by the plant engineer at the Jacksonville, Florida, Plant.

7' diameter by 300' long lime kiln, supported by five sets of trunnion rollers.

Temperature inside kiln at hot end is approximately 1800° F.

Kiln turns at approximately 1 RPM, trunnions turn at approximately 3 RPM on 7" journals in sleeve bearings lubricated by LUBRIPLATE No. 8.

Since changing to LUBRIPLATE No. 8 two years ago, wear on all bearings and journals has been reduced to a minimum, where formerly a definite problem of lubrication existed.

It is in these unusually severe applications where LUBRIPLATE Lubricants dramatically prove their outstanding qualities. Probably more seemingly impossible lubrication conditions have been satisfactorily met with LUBRIPLATE in the past twenty years than by any other group of lubricants.

In most instances, LUBRIPLATE Lubricants have been introduced to solve a difficult lubrication problem. Their performance is so remarkable that their use is extended throughout the plant. They definitely reduce friction and wear, prevent rust and

corrosion and save power.

LUBRIPLATE Lubricants are available from the lightest fluids to the heaviest density greases . . . a product for every lubrication requirement. Let us send you case histories of their use and savings in your industry. Write today.

LUBRIPLATE DIVISION

Fiske Brothers Refining Company
Newark 5, N. J. Toledo 5, Ohio

DEALERS EVERYWHERE—CONSULT YOUR
CLASSIFIED TELEPHONE BOOK

LUBRIPLATE

THE MODERN
LUBRICANT

Want Additional Product Information? See Page 19.

WELDING MACHINES HANG FROM CEILING, SAVE FLOOR SPACE

Hanging welding machines from the ceiling at the Springfield, Mass. plant of Harvey-Whipple, Inc., makes for important savings in floor space, provides better ventilation and keeps the machines from being bumped or jarred. Since long, across-the-floor runs of welding cable are not usually required, the cable is rarely subjected to abuse and gives longer life.



Hanging Flexarc welding machines from ceiling saves floor space and provides better ventilation.

Because of the inverted installation, covers can be removed to facilitate inspection and allow better circulation of the ventilating air. The installation consists of 19 Westinghouse Flexarc-65 a-c welders, eleven of which are suspended from the ceiling at the present time.

CATALOGS ON HOSE, HOSE ENDS AND TUBE FITTINGS

A three-pocket portfolio containing the latest catalogs covering its line of industrial hose and hose ends and tube fittings has been released by The Weatherhead Co., 300 E. 131st St., Cleveland 8, Ohio.

Catalog H-1451 lists Reusable Steel Hose Ends and Industrial Hose for all hydraulic purposes, fuel and oil lines for diesel engines or for any other flexible hose requirements.

Catalog E-1457 is the latest edition of the patented Ermeko Steel and Stainless Steel fittings. The Ermeko fitting requires no flaring, no threading, no welding, and no soldering—consists of only 3 parts and is easily assembled. It has been used for special instrument work at pressures up to 40,000 PSI, and in the smaller sizes has been tested at hydrostatic pressure of 65,000 PSI without failure. Fittings conform to J.I.C. hydraulic standards for industrial equipment.

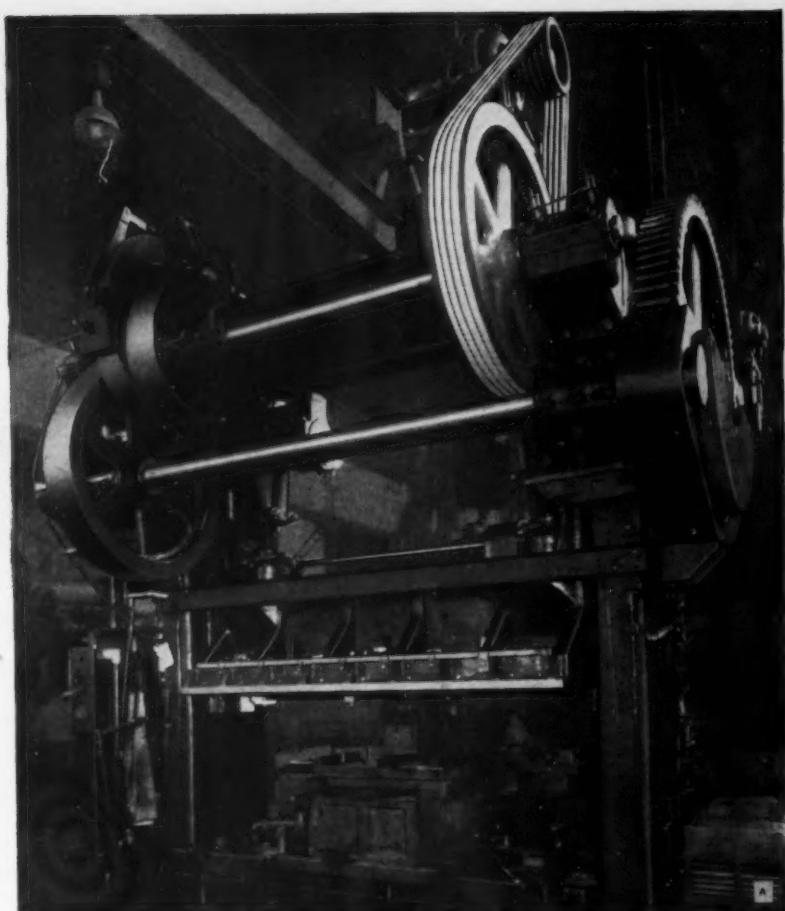
Catalog F-1456 shows a complete line of brass inverted, SAE, compression, threaded sleeve type and pipe fittings. These fittings are made from extruded brass rod permitting large flat wrench surfaces on all elbows and tees.

The portfolio, or copies of each catalog are available on request.

(Please turn to page 256)



The output of this press was seriously bottlenecked by slipping of the short center flat belt with which it was formerly equipped. The Gates Vulco Rope Drive shown has completely overcome the difficulty. The original belts, after more than 4½ years of service, are still going strong.



Let this simple test tell you exactly WHY the Concave Side cuts your V-Belt costs

To see for yourself the belt-saving importance of the Concave Side, just pick up *any* V-belt and bend it as it bends when it goes around a pulley.

As the belt bends, grip its *sides* firmly with your fingers. You will feel the sides of the belt *change shape*. This is because the top of the belt is under tension and, hence, grows *narrower* while the body, under compression, *bulges out*. (See figure 1 and 1-A)

Now look at figures 2 and 2-A. There you see how the bending changes the shape of the belt that is built with the Concave Side —The Gates Vulco Rope. The concave sides of this belt merely *fill out* and become perfectly *straight*. There is no side-bulge. This belt, when bent, *precisely fits its sheave groove*.

A very distinct saving in belt wear results. No side-bulge means that the sides press *evenly* against the V pulley and therefore wear *uniformly*—resulting in longer life for the sidewall and, naturally, *longer life for the belt!*

If you care about cutting your belt costs, it will pay you to make sure, whenever you buy V-Belts, that you get the V-Belt with the Concave Sides...the Gates Vulco Rope!

What Happens When a V-Belt Bends

Straight-Sided V-Belt



Fig. 1



Fig. 1-A

How Straight-Sided V-Belt Bulges in Sheave-Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear at Point Shown by Arrows.

Gates Vulco Rope with Concave Side



Fig. 2



Fig. 2-A

The Concave Side Fills Out to a Precise Fit in the Sheave Groove. No Side Bulge! Sides Press Evenly Against the V-Pulley—Uniform Wear—Longer Life!

CS-508

THE GATES RUBBER COMPANY

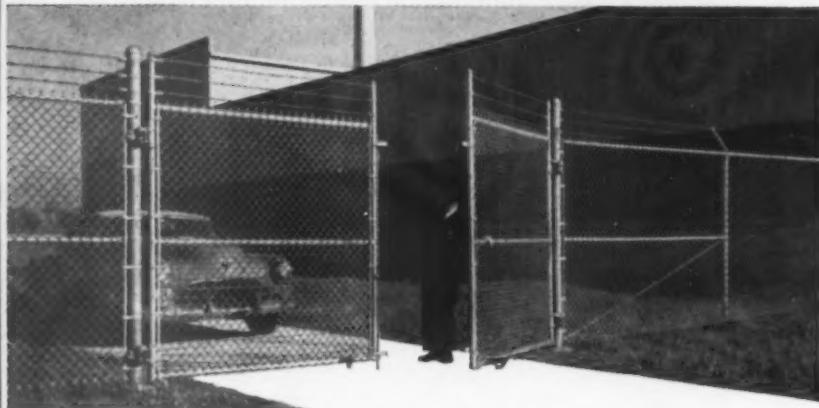
DENVER, U.S.A.

World's Largest Makers of V-Belts

GATES **VULCO**
ROPE **DRIVES**
Engineering Offices and Jobber Stocks
IN ALL INDUSTRIAL CENTERS
of the U.S. and 71 Foreign Countries

PAGE FENCE - Since 1883

• AMERICA'S FIRST WIRE FENCE •



Tailored to Your Needs

Whether you have management or operating responsibility we have a new, informative booklet that's tailored for you. It will give you valuable information on day and night protection of property and persons by means of fence that's also tailored to your requirements. Your Page Chain Link Fence can be of

the style, height and metal that is best for you, no matter what the conditions. And it will be erected by experienced, local experts who offer more than a product—a complete fence service. Write for DH-142. With it we will send name and address of nearest Page Fence specialist.

Write to PAGE FENCE ASSOCIATION in Monessen, Pa., Atlanta, Bridgeport, Chicago, Denver, Detroit, Los Angeles, Philadelphia, Pittsburgh, New York or San Francisco.

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE COMPANY, INC.

New ZIP-GRIP® Self-Locking SET SCREWS

it's CONTRA-THRUST
NOT Interference Fit alone,
that gives ZIP-GRIP® it's
UNIQUE self-locking ACTION

New, Free Demonstrator shows why you
get more than Interference Fit, with
ZIP-GRIP®. Solve your baffling problems
of vibration and other difficult set screw
applications. SPAT PEND.

Send for your FREE
Demonstrator and
Data Sheet today!

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142 Main St., Bartlett, Ill.
We Specialize in Solving Puzzling Set Screw Problems

Ask for complete catalog of
SEIKO Set Screws

NEW SILICONE RESINS FOR ELECTRICAL APPLICATIONS

Two new General Electric silicone resins for electrical applications have been announced.

One, designated G-E silicone insulating resin number 81132, is a flexible resin of good drying speed. It is tough, fast-drying without a catalyst, has excellent build on glass cloth, and good heat life. It is intended for use as a coating on glass cloth and glass sleeving, and as a sticker for mica-glass tape and other flexible mica products. It is supplied as a 60 per cent solution in toluol.

The other new resin is designated G-E silicone resin number 81145 and is supplied as a 50 per cent solution in petroleum spirits. It was designed for bonding and impregnating motors, generators, and transformers requiring Class H insulation. However, it may be used in bonded mica, mica tape, and glass combinations. When extreme flexibility is not desired it can be used effectively as a coating for glass cloth and sleeving. When properly cured it is a relatively hard resin but maintains a high degree of flexibility. It will through-cure readily and develop good bonding properties at elevated temperatures. It is to be used as furnished; no catalyst is necessary.

Detailed technical information is available from the Chemical Department of the General Electric Company at Pittsfield, Mass.

1 1 1

TITANIUM COMPANY TO BE FORMED BY REMINGTON AND CRUCIBLE

Officials of the Remington Arms Co., Inc., Bridgeport, Conn., and Crucible Steel Co. of America, New York, N. Y., announce plans for the formation of a new and jointly owned company, for the production of titanium metal and titanium metal alloy products. These products include sheets, rods, tubes, wire, forgings, castings and other fabricated forms for widespread industrial uses.

Sales of titanium will be handled from the offices of the Remington Arms Co., Inc., at Bridgeport, Conn., for the present, but it is contemplated that all operations will be moved to Pittsburgh, Pa. at a later date.

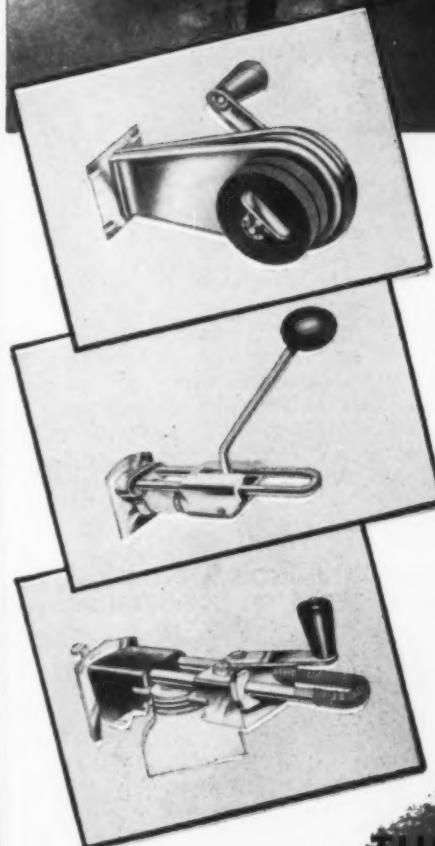
Because titanium combines lightness (about half as heavy as steel) and strength (stronger than aluminum and comparable with certain grades of steel), its application as an aircraft structural material is of particular interest. The metal also possesses remarkable resistance to corrosion, and its many possible alloy combinations give promise of numerous special applications.

Titanium ore, of which there appears to be an abundant supply in the United States and elsewhere in the world, is usually found with other elements and compounds from which it is separated. At the present time, titanium metal in the form of sponge is made from this ore.

(Please turn to page 258)

50% LESS MAINTENANCE, INCREASED PRODUCTION, BETTER QUALITY PLATING with our **UDYLITE** Equipment

says DAZEY CORPORATION'S
PLATING PLANT SUPERINTENDENT



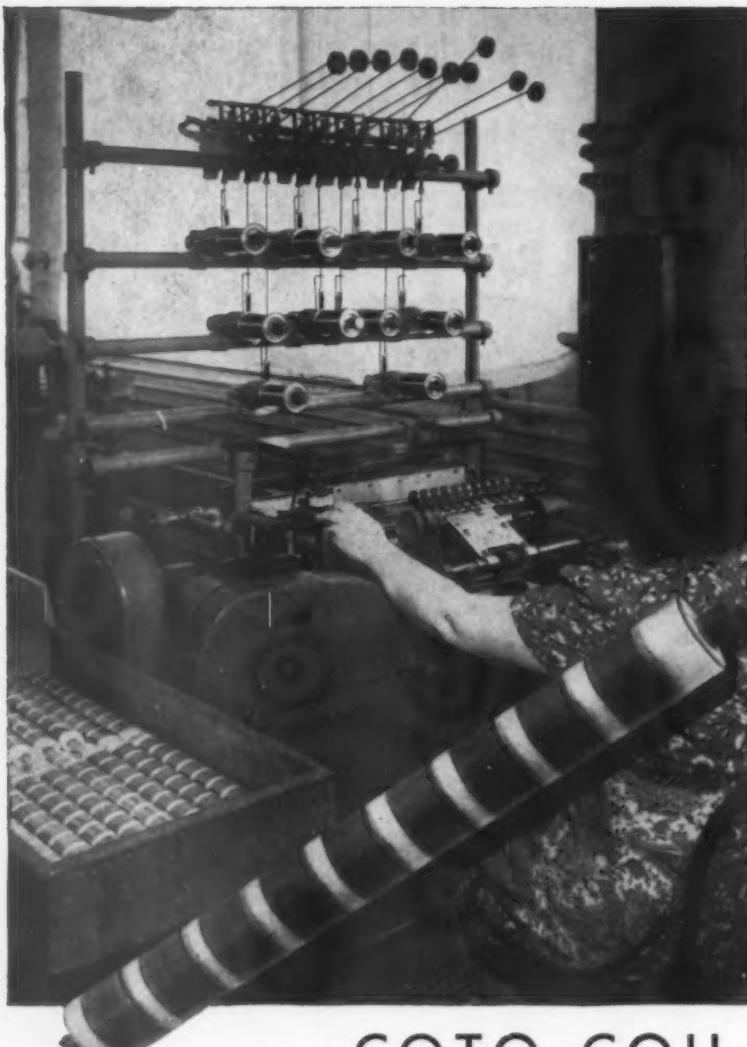
Dazey Corporation, St. Louis kitchen specialty manufacturer, is working around the clock these days. And, according to their president, Mr. William E. Gundelfinger, "We owe no small part of this activity to our Udylite plating installation—the finest equipment in America."

Dazey has two Udylite Full Automatic Plating Machines—one used for nickel plating and one for cadmium, a complete set of Udylite barrels and enough Udylite-Mallory Rectoplaters to provide sufficient current for their operation. Of this equipment, Mr. Dale Bolyard, head of Dazey's plating, polishing and finishing department, reports: "Our Udylite installation saves us 50% in maintenance, has increased production with

better quality plating—as well as giving us a big saving in floor space." In addition, Mr. Bolyard has found Udylite equipment is extremely economical to operate.

This is no isolated case. Hundreds of other satisfied Udylite customers report the same results. This is one of the reasons the Udylite Corporation has consistently been the leader in the Plating Industry. There are many ways Udylite equipment can bring tangible benefits to your operations. Call in your nearby Udylite Technical Man today and have him show you how Udylite can provide greater economy and added profit for your plating plant. Or write direct to The Udylite Corporation, Detroit 11, Michigan. There's no obligation.

THE **Udylite** CORPORATION
DETROIT 11, MICHIGAN
PIONEER OF A BETTER WAY IN PLATING



COTO-COIL PRODUCTION METHODS

Meet Price Requirements

Coto-Coil's highly specialized equipment and skilled operators, backed by engineering know-how, produce better windings at lowest cost and assure correct coil function.

COTO-COIL WINDING IN MULTIPLE GROUPS

Nine coils are shown being wound simultaneously at high speed with .0007" cellulose film interleaved between layers of wire. The machines are automatic and versatile. They will handle wire from #18 to #42, and acetate film or paper insulation from .0007" to .005" thick . . . at high speed.

We welcome the hard to satisfy. Let us figure on your particular requirements.

COTO-COIL CO., INC.
COIL SPECIALISTS SINCE 1917
65 PAVILION AVE.
PROVIDENCE 5, R.I.



MORE STORAGE SPACE AT LOW COST

The illustration, from a motor manufacturing plant, shows how storage space was increased by a visible 300 per cent without the cost of constructing a new building.

The crated units, placed on skids, are stored four-high in correctly designed storage racks with the aid of a portable elevator, which also is used for the easy and instant removal of any skid-load thus stored. In the same plant box top loads of parts are similarly stored ceiling high in storage racks.

In this plant the aisles are clear and there is no congestion to impede movements of materials, nor any complaint about lack of floor space, since the storage racks were installed.



These storage racks are made of selected structural steel with arc-welded construction for maximum strength without excessive bulk or weight. They are made with or without bottom rails, permitting storage of the first tier directly on the floor by means of a lift truck, as shown in the illustration. This storage rack line includes barrel and drum racks, which are widely used for space-saving and accessible storage.

The portable elevator does all the work of carrying the load to storage, and lifting and spotting it in the rack. These elevators are built in hand or electrically operated models, and with any lifting height required for ceiling-high storage.

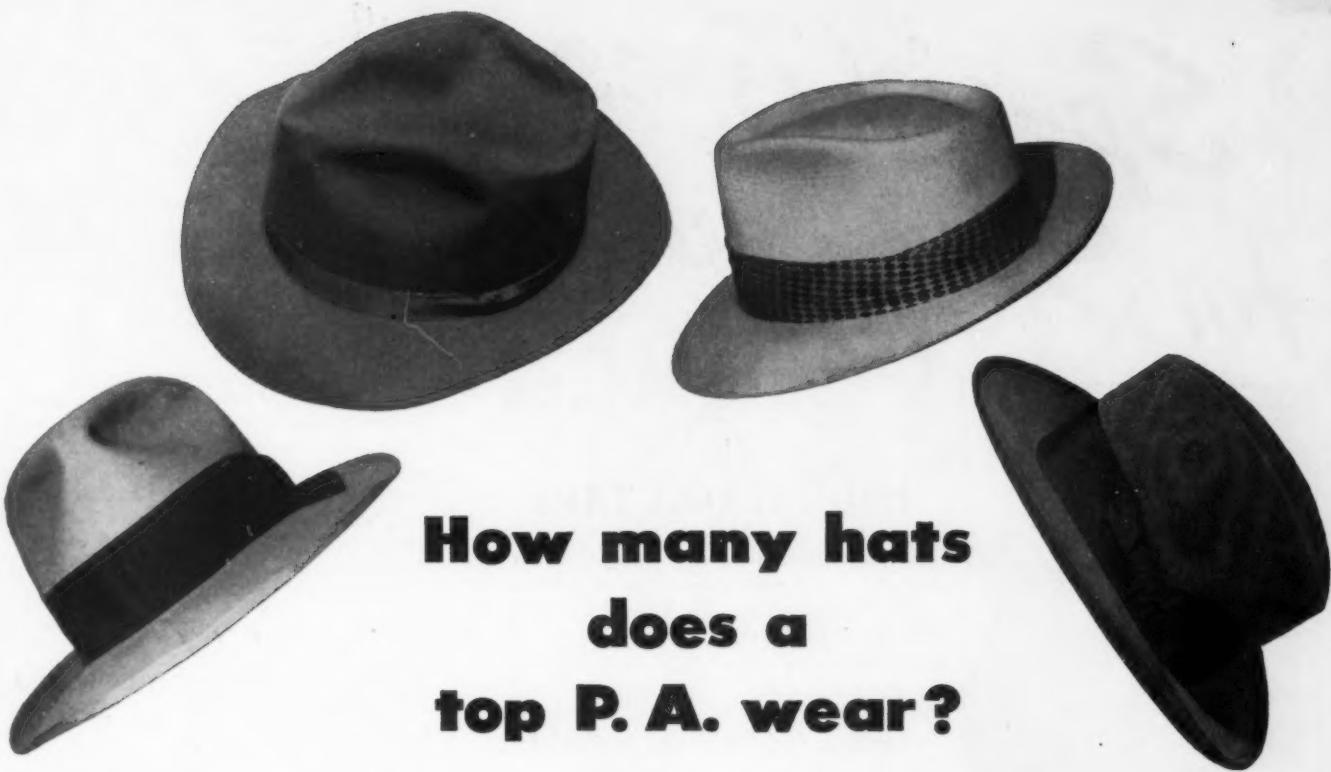
Bulletin 4873 on storage racks will be mailed upon request by Barrett-Cravens Co., 4609 S. Western Blvd., Chicago 9, Ill.

CARNEGIE-ILLINOIS ANNOUNCES INCREASED STEEL PRODUCTION

Supplementing U. S. Steel's announcement of forthcoming increased steel production, the Carnegie-Illinois Steel Corporation, major steel-producing subsidiary, has disclosed comprehensive improvements in its operations at Gary, Ind. They are: (1) rebuilding of two coke oven batteries at the Gary Steel works, and (2) revamping of stainless steel facilities at the Gary Sheet and Tin mill.

The coke oven batteries to be rebuilt are Nos. 13 and 15. The former battery

(Please turn to page 260)



How many hats does a top P. A. wear?

IN buying component parts, a top P.A. "wears the hat" of a Purchasing Agent, of course. And to make sure of getting the best value, he also puts on his "salesman hat", his "engineer hat" and his "advertising hat".

The *P.A.-salesman* asks: "Does this part have the quality to help sell our product?" The *P.A.-engineer* asks: "How's the engineering service in back of it?" The *P.A.-advertising manager* asks: "Will it add to our product's public acceptance?" They're all vital questions because these three features—singly or together—far outweigh price in importance.

When it comes to tapered roller bearings, Timken® gives you the highest quality, the best service, the greatest public acceptance—and therefore, the most value.

We think you'll find this simple formula helpful in buying with an eye to value:

$$\text{VALUE} = \frac{\text{QUALITY} + \text{SERVICE} + \text{PUBLIC ACCEPTANCE}}{\text{PRICE}}$$

And remember, by this or any other formula, Timken is your best buy in tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

P. A. Notes:

GNAT'S EYELASH. Finishing to amazingly close tolerances accounts for much of the precise, smooth-rolling performance of Timken bearings. This honing operation is typical of Timken's precision manufacturing methods.



BIG LOAD ON YOUR MIND? The biggest Timken tapered roller bearing has almost 2,000,000 lbs. capacity at 500 r.p.m. The smallest, 315 lbs. Altogether there are 5,850 sizes for you to choose from.

FIRST CHOICE. Throughout industry, Timken tapered roller bearings are first choice for original equipment. And surveys show that no other bearing name can come close to the public acceptance of "Timken".



Special Tapes for Special Jobs

Polyken® INDUSTRIAL TAPE



PRODUCTION MEN credit one or more of the many versatile POLYKEN Industrial Tapes with savings up to 85%! These "specific tapes for specific uses" can help you cut costs, save time, improve methods!

Replaces Old-Fashioned Methods!

Each POLYKEN Industrial Tape replaces costly, inadequate, hard-to-handle materials, for bundling, tying, sealing, edging, holding, insulating, reinforcing, repairing, marking, masking—and many others.

Meets Special Adhesive Needs!

Adhesive masses of POLYKEN tapes can be made with one or more of these "built-in" qualities: non-corrosive, non-staining, heat- or flame-resistant, low or high tack, vulcanizable, low temperature, colored, transparent, strong anchorage to backing.

Solves Specific Backing Problems!

POLYKEN's cloth backings can include any of these qualities: tensile strength, thickness or thinness, non-transparency, flexibility, resistance to tearing, abrasion, weather, moisture vapor.

FREE BOOKLET!

Write today for your FREE copy of "Tape Is a Tool" to help you select the specific tape you need for your specific job. Or outline your problem in a letter—our research department will gladly work with you to produce the right tape for your operation. Write POLYKEN, Dept. 9-9.



Polyken®
INDUSTRIAL TAPE

DEPARTMENT OF

BAUER & BLACK

DIVISION OF THE KENDALL COMPANY

222 W. ADAMS ST., CHICAGO 6

(Continued from page 258)
already is dismantled and undergoing reconstruction. The battery, including 77 coke ovens, is scheduled to be returned to operation in December of this year. Dismantling of No. 15 battery is underway and it is to be rebuilt by May, 1951. At the Sheet and Tin mill, welding, shearing, leveling and polishing facilities will be added to the present stainless steel rolling and finishing installations to enable the plant to produce full-finished stainless steel sheets.

In his announcement, Irving S. Olds, chairman of the board of U. S. Steel, announced that Carnegie-Illinois will add 1,660,000 tons of steel production annually through improvements to Chicago and Pittsburgh district operating facilities and also, through construction to be undertaken in 1951, will add 700,000 more tons of ingots via a new integrated Carnegie-Illinois mill to be built on its presently owned site on the Delaware river south of Trenton, N. J.

1 1 1

INCREASE IN CAPABILITY OF POWER SYSTEMS PLACED AT 52%

"A full year ahead of schedule, we have reached our goal of an average of 15 per cent reserves of power production capability in the United States", Elmer L. Lindseth, President of the Edison Electric Institute, said in announcing results of the 7th Semi-Annual Power Survey conducted by the Institute's Electric Power Survey Committee. New construction in progress will maintain and bolster these reserves, he added.

The committee's complete report of the survey deals with the capability of the electric power systems, peak loads, reserve margins, and annual energy output. It covers 98 per cent of the electric power industry in the United States, including both the business-managed companies and the governmental power-producing agencies—Federal, state and municipal. The data presented are based primarily upon detailed information provided by representatives of the power areas, which was reviewed and coordinated at meetings of the representatives held in New York last month.

The report also deals with the production schedules of heavy electric power equipment and the manufacturing capacity available for producing additional equipment. The data are based upon information supplied by the manufacturers at meetings held concurrently with the meetings of the power area representatives.

The survey covers the six-year period 1948 through 1953. Here is the summary of the basic findings of the survey:

1. Capability of the power systems for the country as a whole, is increasing at a rate considerably higher than estimated peak loads. For the period 1948 through 1953 the increase in capability is estimated at 52 per cent, while peak load increase is estimated at 37 per cent.

(Please turn to page 262)

Fabricators Can Tell the Difference in Carpenter ATF* Stainless Tubing

Perfect seating on tube bundle jobs—easy bending and coiling—are advantages your fabricator can tell you about when he uses Carpenter Heat Exchanger Quality Stainless Tubing.

You pay nothing extra for the exceptionally *uniform walls* of this tubing. As a matter of fact, you will frequently find that Carpenter Stainless Tubing costs less than other kinds. And easy, trouble-free fabrication with these uniform tube walls means a lot from the cost standpoint, too.

When you need the full corrosion resistance of Stainless in tubing or pipe, it's time to call Carpenter. We can give you personal help in the plant, and useful printed information that will help you on the job. The 12-page Data File Folder on Carpenter Stainless Tubing contains much useful information on standard analyses, sizes, special shapes, etc. For your copy, just write a note on your company letterhead, indicating your title.



All-Stainless condenser containing 481 Carpenter Stainless Tubes (3/4" x 16 gauge, Type 304). The fabricator says: "We have used Carpenter Stainless Tubing for a number of years. In addition to the quality of the tubing, we like the quick service we get from Carpenter's distributor."

* Purchasing Men tell us
that Carpenter's
quality controls help
reduce fabricating costs

THE CARPENTER STEEL COMPANY
Alloy Tube Division, Union, N. J.
Export Department: Woolworth Bldg., New York 7, N. Y., "CARSTEELCO"

Carpenter

STAINLESS TUBING



—guaranteed on every shipment

24-HOUR SERVICE ON ORDERS

You get delivery when you want it. On mill orders you get a definite delivery promise within 24 hours. Call your Carpenter Stainless Tubing Distributor.

LARGE INDUSTRIAL GEARS



Bevel and mitre gears up to 60" dia. are cut on gear planers to accurate tolerances.

CUSTOM MADE GEARS up to 145" diameter

You can save time, money and errors in your large and heavy industrial gear requirements with the prompt, custom service of SIMONDS GEAR. Within easy shipping distance of many heavy industry plants—with a personalized attention to your specific gear requirements—SIMONDS GEAR is able to assure you fast, accurate gear service for all heavier gear needs. Size range includes: Spur Gears up to 145"—Bevel and Mitre Gears up to 60"—Worm Gears up to 72"—also worms, worm gears, racks and pinions. Materials include: cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite. Place your next heavy gear inquiry with SIMONDS GEAR and test the difference!

Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.



THE
SIMONDS
GEAR & MFG. CO.
LIBERTY at 25th • PITTSBURGH 22, PA.

(Continued from page 260)
2. Reserve margin percentages increased from 6.6 for 1948 to 14.2 for 1949. The percentages are expected to be 15.6 for 1950; 18.9 for 1951; 19.1 for 1952, and 18.6 for 1953 under median hydro conditions. The percentage for 1953 is expected to increase somewhat as construction programs are further developed.

3. Manufacturing capacity is available for building a considerable amount of additional electric generating equipment over and above that presently on order, for delivery in 1951 and subsequent years. Facilities for the manufacture of electric generating equipment are capable of producing 10,000,000 kw of capacity per year—8,000,000 thermal and 2,000,000 hydro. This 10,000,000 kw is more than double the anticipated annual load growth for the next several years.

DY-CHEK PROCESS REVEALS CRACKS AND OTHER FLAWS IN METAL

A metal inspection process known as Dy-Chek, which indicates the presence of cracks or other flaws in metal parts or products, is announced by The Dy-Chek Company, a division of Northrop Aircraft, Inc., 1515 E. Broadway, Hawthorne, Calif. The process depends upon the controlled use of a red dye, together with other liquids. When applied to the surface of the suspected metal, the process causes a crack or other opening to "bleed" in telltale scarlet lines. Chief advantages claimed for the new process are its relative inexpensiveness and its simplicity, its portability, and its application to both ferrous and nonferrous metals.

The process is known as the dye penetrant method of inspection. It not only is applicable to mass production inspection of parts under factory conditions, but may be used by a single mechanic or inspector in examining parts in the field. The new product is available in drum lots for industrial users, to compact kits for field inspection use. It can be applied by any convenient method—brushing, spraying or dipping, and can be used on any kind of metal.

U. S. PHARMACOPOEIA STANDARDS FOR GLYCERINE REVISED

The United States Pharmacopoeia XIV which will be published shortly, contains revised standards for glycerine. For the most part, these standards remain as in previous editions, with one notable exception: A test for chlorinated compounds is now included. This test is carried out by refluxing the sample of glycerine with morpholine for 3 hours and then acidifying with nitric acid. The turbidity produced by the addition of silver nitrate is then compared with a blank containing a known quantity of hydrochloric acid.

This test is designed to detect the small amounts of chlorinated compounds that may be present in synthetic glycerine.

(Please turn to page 264)



FOR GREATER SECURITY
FASTEN FAST WITH
CLARK FASTENERS

BOLTS . . . NUTS
RIVETS . . . SCREWS

Since 1854 the Quality . . .
Accuracy . . . and Uniformity of
ALL Clark Products has never
been surpassed. These 97 years
of leadership explain why users
always ask for them by name
"Clark"—they Fasten . . . Fast
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MILLDALE, CONN.

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BILLINGS

OUR HAMMERS TALK PRODUCTION!
OUR FORGING ENGINEERS KNOW FORGINGS...

WRITE OUR FORGINGS DIV. Dept. SF-3
THE BILLINGS & SPENCER CO.
Hartford 1, Conn., U.S.A.

User Reports . . .

N-B-M #397 SILVER BABBITT LASTS 5 TIMES AS LONG!

Large Portland Cement Plant used N-B-M Silver Babbitt on Crusher Bearings. Result? 400% longer bearing life . . . 30% lower babbitt cost!



The superintendent of this cement plant was—in his own words—"naturally skeptical" when quoted the low original cost of N-B-M #397 Silver Babbitt, compared to a tin-base babbitt then being used. But, later he writes:

"We are happy to say the #397 Silver Babbitt has already given us 4 to 5 times the service of the other metal. We believe the record speaks for itself."

These big savings—in both original cost and actual service cost—are possible because #397

Silver Babbitt costs 30% to 40% less than tin-base babbitt—yet has these important features that insure easy handling and better bearing performance:

- Retains hardness at higher temperatures
- Easy to bond
- Has high resistance to corrosion
- Embeds grit—even at room temperature

N-B-M Silver Babbitt offers plant and product engineers this real challenge: *chances are that it can make important savings in your plants or products.* Investigate it now—write today for complete information and prices!

This folder gives complete facts . . .

Lists physical properties and operating characteristics of N-B-M Silver Babbitt. Engineering Brief gives instructions on preparation of shells for good bonding, and pouring. Be sure to ask for your free copy!



Please send me your free folder on N-B-M Silver Babbitt . . .

Name.....

Title.....

Company.....

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NATIONAL BEARING DIVISION

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Good News -

NOW, all Johnson XLO Music Spring Wire is made from imported, improved Swedish rod. Johnson researchers plus the resources of Swedish steel-makers have developed an electric furnace steel, with closely controlled analysis, which is being used exclusively in Johnson Music Spring Wire. The result—more uniformity and added fatigue.

This quality advance is in line with the Johnson policy of giving something better whenever possible.

Ample stockpiles warrant a continuous supply.

JOHNSON STEEL AND WIRE COMPANY, INC. WORCESTER 1, MASS.

New York Philadelphia Cleveland Detroit Akron Chicago
Atlanta Houston Tulsa Los Angeles Toronto

DEVELOP TESTER FOR LOADED CONTAINERS OF VARIOUS KINDS

Fatigue tester for the testing of loaded paperboard, fiberboard and wooden shipping cartons and boxes has been developed by L. O. Koven & Bro. Inc., Jersey City, N. J. The testing machine has a vertically mounted, revolving drum, consisting of a hexagonal testing chamber supported by two flanged steel heads, mounted on an I-beam. The body sections are made of 3"-thick dressed fir on which are mounted specially designed eccentric, oak tumbling baffles. The unit is motor driven through a speed reducer and gears mounted on the base. An automatic counting device indicates the number of times a carton drops from one baffle to the next.



The Koven loaded-container tester is available in two models.

The tester is built in two models for handling small-medium and medium-large containers, respectively. Model A is capable of handling containers up to 20" x 20" x 20", not exceeding 250 lbs. gross weight. Model B is capable of handling containers having a length of 20" to 72", and weighing up to 1000 lbs. gross.

Test procedures indicate (1) the ability of a container to withstand various shocks and impact stresses, (2) the ability of packing and carton design to protect the contents, and (3) comparison of different designs of containers of the same size and carrying the same load.

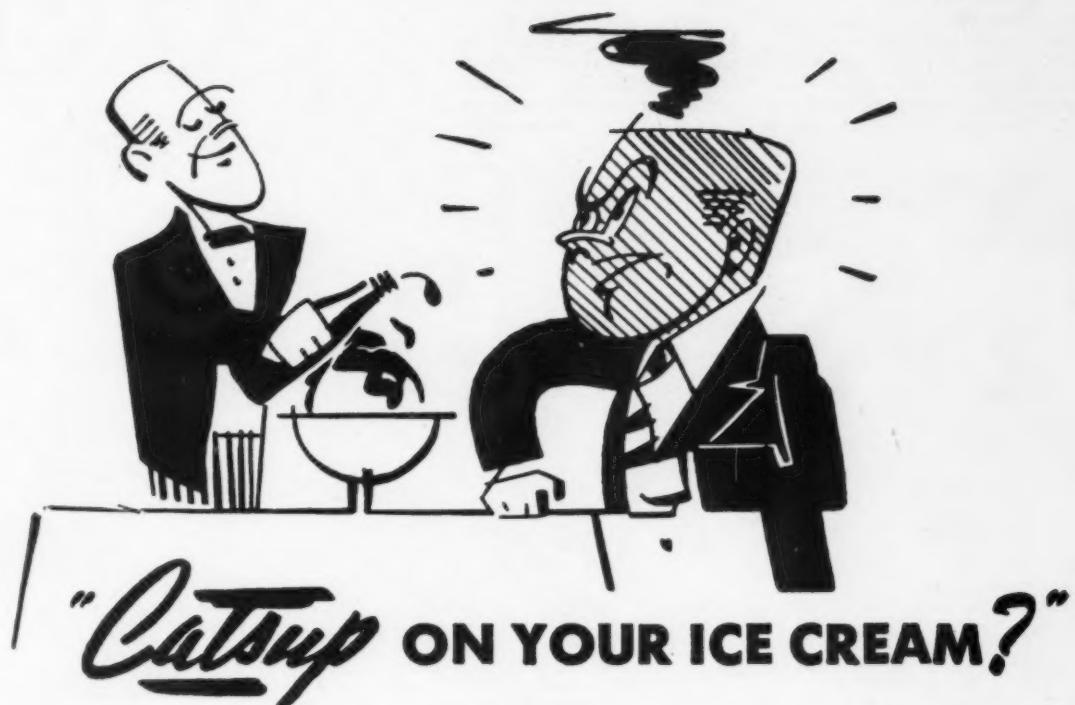
G. E. DEVELOPING SPECIAL SILICONE RUBBER COMPOUNDS

New silicone rubber compounds for special applications are being developed by the General Electric Company's Chemical Department, Pittsfield, Mass.

Two new low durometer compounds, known as G-E #13011 and G-E #13012 are for use in extreme temperature applications for shock mounts, light spring-loaded gaskets, damping devices, and myriads of related uses where conventional or silicone sponged rubber parts either deteriorate or take compression "set" and collapse.

Another general purpose silicone rubber compound, known as G-E #13013,

(Please turn to page 266)



Just because you used catsup on your steak, the waiter shouldn't assume you use it on the rest of your dinner too!

And just because one bearing is best lubricated by one particular grade of oil, you shouldn't assume that the same oil is best for *all* bearings on that machine. In many cases it isn't.

OIL CUPS permit you to lubricate each bearing with the oil best suited to that bearing—thus prolonging bearing life, reducing maintenance costs, cutting down-time, boosting production. And oil cups fortunately *cost very little*.

Gits oil cups have been the standard for industry for more than 40 years. Gits Bros. has the largest selection of oil cups available anywhere. Call on Gits Bros. for a prompt, efficient solution to your lubrication problems.

Write for free Price Guide Catalog

GITS BROS. MFG. CO.

1865 S. Kilbourn Ave. • Chicago 23, Ill.

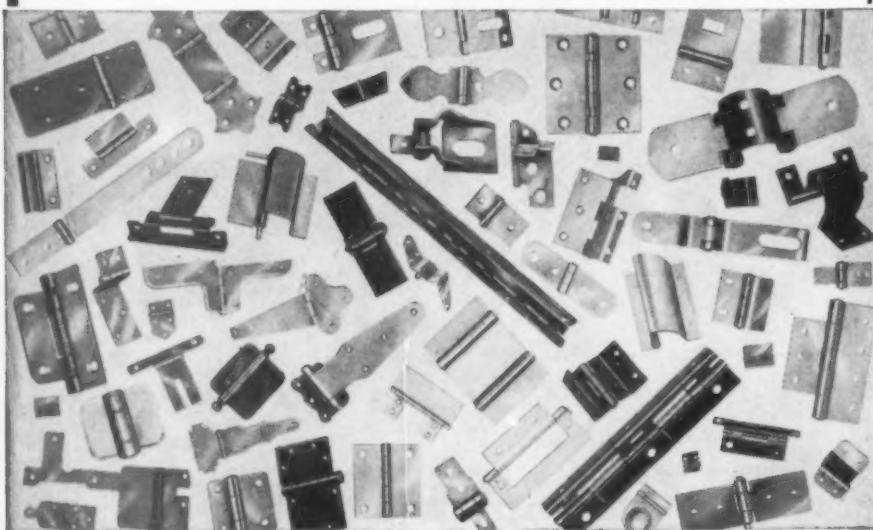
Make STANLEY your hinge source!

You just specify the hinge you want—Stanley does the rest, from first sketch to finished product.

Stanley gives you the advantage of expert designers and production engineers—research and tool-making facilities—the particular plating and

finish best suited to your needs.

As the world's largest producer of hinges, Stanley is geared for efficient production to meet your requirements. Write for full information—not only on special hinges but drawings and stampings as well—now!



PRESSED METAL DIVISION . . . THE STANLEY WORKS
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HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL



"PEL-X is
WATER REPELLENT"

"I don't mean to imply that you should throw away your old raincoat and drape yourself in PEL-X on rainy days — no, sir! PEL-X is good but not that good. On my drawing board, however, I've found that PEL-X repels moisture, perspiration and even drops of water far better than any other tracing cloth. What's more, PEL-X saves me time, work and money."

Give PEL-X a test in your drafting room. You'll find (just like one of our customers discovered in a recent test) that it tops them all on every count including erasability, evenness of pencil lines, workability, transparency, etc. Generous sample on request.

THE HOLLISTON MILLS, INC.
NORWOOD, MASS.

NEW YORK PHILADELPHIA CHICAGO

★ PEL-X is backed by Holliston's 50 years of leadership and experience in developing special purpose cloths for industry.



(Continued from page 264)

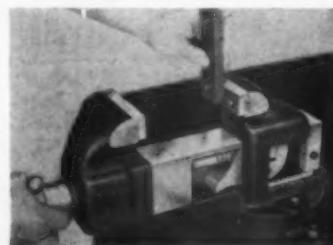
is of particular interest to specialty fabricators. It has uniformly good general properties and is excellent to mold and extrude in fabrication of parts.

A red-colored, medium (50) durometer stock, it exhibits excellent flow and fine parting lines in molding and has equally good flow in extrusion work.

1 1 1 DODGE SLIDE-ACTION VISE SPEEDS PRODUCTION, CUTS COSTS

A new quick action machinist's vise embodying a patented fast slide action is announced by the Dodge Manufacturing Corp., Mishawaka, Indiana. It is known as the Dodge Slide-Set vise.

The vise opens or closes to any position in one second through a push-pull action which eliminates spinning the handle. The slide action is simple, fast, positive. A turn and a half of the handle



Phantom view showing pawl and ratchet mechanics of Dodge Slide-Set vise. Jaws of vise are pushed on or pulled off work. As jaws contact work a clockwise turn of the handle applies full pressure conventionally. Turning handle counter-clockwise throws vise into neutral position ready for fast slide action in either direction.

counter-clockwise, and the jaw slides in "neutral" to any position. From the moment the work is engaged the vise operates in the conventional manner. The vise is built in one size only, namely 4". It weighs 58 pounds, and combines the ruggedness and full power of a conventional type vise with an instant slide action that speeds production, reduces operator fatigue, and increases efficiency on bench and assembly operations.

A specially designed no-pinch handle protects the operator against blood blisters between the thumb and fore-finger. The vise is provided with either a swivel or stationary base.

1 1 1 "FOREIGN TRADE PRACTICE" EXPORTING—IMPORTING

A guide to basic reference sources on the practical aspects of foreign trade is offered to American businessmen interested in exporting or importing in a new publication issued by the Office of International Trade, the U. S. Department of Commerce announced recently.

The pamphlet, "Foreign Trade Practice (Reference Sources)," replacing "Foreign Trade (Basic Information Sources)," provides an up-to-date listing of both governmental and non-governmental publications relating to foreign trade practice.

(Please turn to page 268)

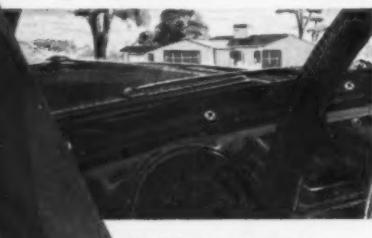
You benefit from this dramatic new campaign in the



Can you find the clue...



...to quality? X marks the spot...



PHILLIPS SCREW

There's no mystery to quality when you know what clue to look for. Phillips Cross-Recessed-Head Screws are proof of extra care in today's manufacture. They assure lasting, creep-free tightness at all points of fastening. Be on the lookout for Phillips Screws... used on everything from streamlined cars to modern hearing aids.

HILLIPS Cross-Recessed-Head SCREWS
on sale at hardware, automotive
and mill supply outlets

PORTER-CABLE • CENTRAL SCREW • CONTINENTAL SCREW
H. M. HARPER CO. • NATIONAL LOCK • PARKER-KALON CORP.
PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.
SHAKEPROOF INC. • THE SOUTHBURG HOWE MFG. CO. • WALES-BEECH CORP.



Public urged to look for Phillips Screws
— the clue to quality... found on
all modern products

BEGINNING AUGUST 26, a striking campaign on Phillips Screws will be launched in *The Saturday Evening Post*. Aimed at the general public, it will tell 14 million readers to look for the mark of extra quality in well-built products ... *the identifying X that appears on the head of Phillips Cross-Recessed-Head Screws*.

Whether you use Phillips wood screws, machine screws or tapping screws, you benefit from this forceful quality story. Remember, too, when you use Phillips Screws you build a better product... save time, money, work-hours.

Be sure to put the "clue" to extra quality in your product.

PHILLIPS Cross-Recessed-Head SCREWS

X marks the spot... the mark of extra quality

AMERICAN SCREW CO. • THE BLAKE & JOHNSON CO. • CAMCAR SCREW & MFG. CORP.
CENTRAL SCREW CO. • CONTINENTAL SCREW CO. • ELCO TOOL & SCREW CORP.
GREAT LAKES SCREW CORP. • THE H. M. HARPER CO. • NATIONAL LOCK CO. • PARKER-KALON CORP.
PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.
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THE FASTENERS OF TODAY... AND OF THE FUTURE



More Mop for Your Money

It takes a laboratory to control production of mop yarns that absorb water rapidly yet give long wear.

Only at The Fuller Brush Co., will you find this complete control of mop quality.

Fuller's constant laboratory analysis of mop yarns includes two close-tolerance twist tests, two tensile strength tests, water absorption tests for quantity and for speed, wear test and shrinkage test. Fuller writes the yarn specifications and has worked closely with the same textile mills for over 25 years. Consequently, in every Fuller mop you can depend on (1) long wearing quality (2) greater water absorption and (3) high speed rinsing -- which means cleaner yet faster mopping.

NOW AVAILABLE in limited quantities
Mops of Cellulose Yarn for Smooth floors



The FULLER BRUSH CO.,

INDUSTRIAL DIVISION, 3554 MAIN ST., HARTFORD 2, CONN.

IN CANADA: Fuller Brush Company Ltd., Hamilton, Ontario

Please send me without obligation your reprint on
"Reducing Floor Cleaning Costs."

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Company _____

Street _____

City _____ Zone _____ State _____



(Continued from page 266)

Topical subdivisions of the new reference source booklet are as follows: (1) Handbooks on Techniques; (2) Bibliographies and Guides; (3) United States Government Services Designed Especially for Foreign Traders; (4) Basic Reference Books; (5) Regulations Affecting Export Trade, Affecting Import Trade; (6) Tariffs and Trade Agreements; (7) Statistics; (8) Directories—U. S. Exporters, U. S. Manufacturers, Trade Organizations, Foreign Government Representatives and Services in the United States; (9) Private Trade Journals—For the Foreign Trade Community, For the Foreign Trade Community Abroad; (10) Reports and Programs of Organizations Concerned with Foreign Trade; and, (11) Importing.

Copies of the pamphlet, prepared by Helen Houck under the direction of E. F. Becker, Chief of the Commercial Intelligence Branch, and E. E. Schnellbacher, Director of OIT's Intelligence and Services Division, are available at 20 cents each from U. S. Department of Commerce field offices, or from the U. S. Department of Commerce, Washington 25, D. C.

NBS ISSUES CIRCULAR ON CONTROL OF ODORS

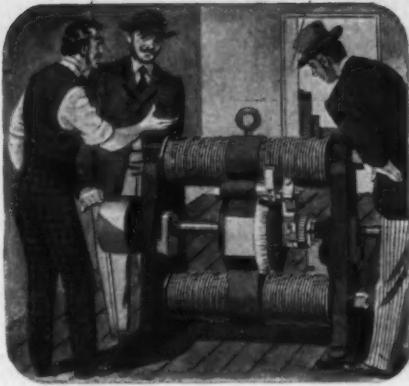
A concise, readable presentation of the problem of undesirable industrial and household odors together with practical methods for their control, is given in a new circular, *Control of Odors*, just published by the National Bureau of Standards. This pamphlet now available from the Government Printing Office, is based on research conducted at the Bureau and on critical consideration of the extensive technical literature on odor control.

The limited usefulness of adsorbents, particularly in homes is discussed. If an odor cannot be removed by cleansing or by ventilation, it may be desirable to add something to the atmosphere of the room to make the odor less noticeable or less objectionable. The use of masking, anesthetic, and irritant effects for this purpose is explained, and reasons for avoiding all but the first of these are pointed out. Several points of psychological or historical interest in connection with the masking of odors are mentioned. The principal sections discuss the control of industrial odors to prevent a nuisance in the neighborhood and the very different problem of control in households and places of business. Somewhat briefer sections discuss the sense of smell and the nature of odors, and the special problem of controlling odor in sick rooms and hospitals.

National Bureau of Standards Circular 491, *Control of Odors*, 12 large double-column pages, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for 10 cents a copy. Remittances from foreign countries should be in United States exchange and should include an additional sum of one-third the publication price to cover the cost of mailing.



1 1600—Man worked hard for his pay in these days. Crude machines like this began to lighten his load by replacing laborious handwork with foot power. But progress was really only beginning.

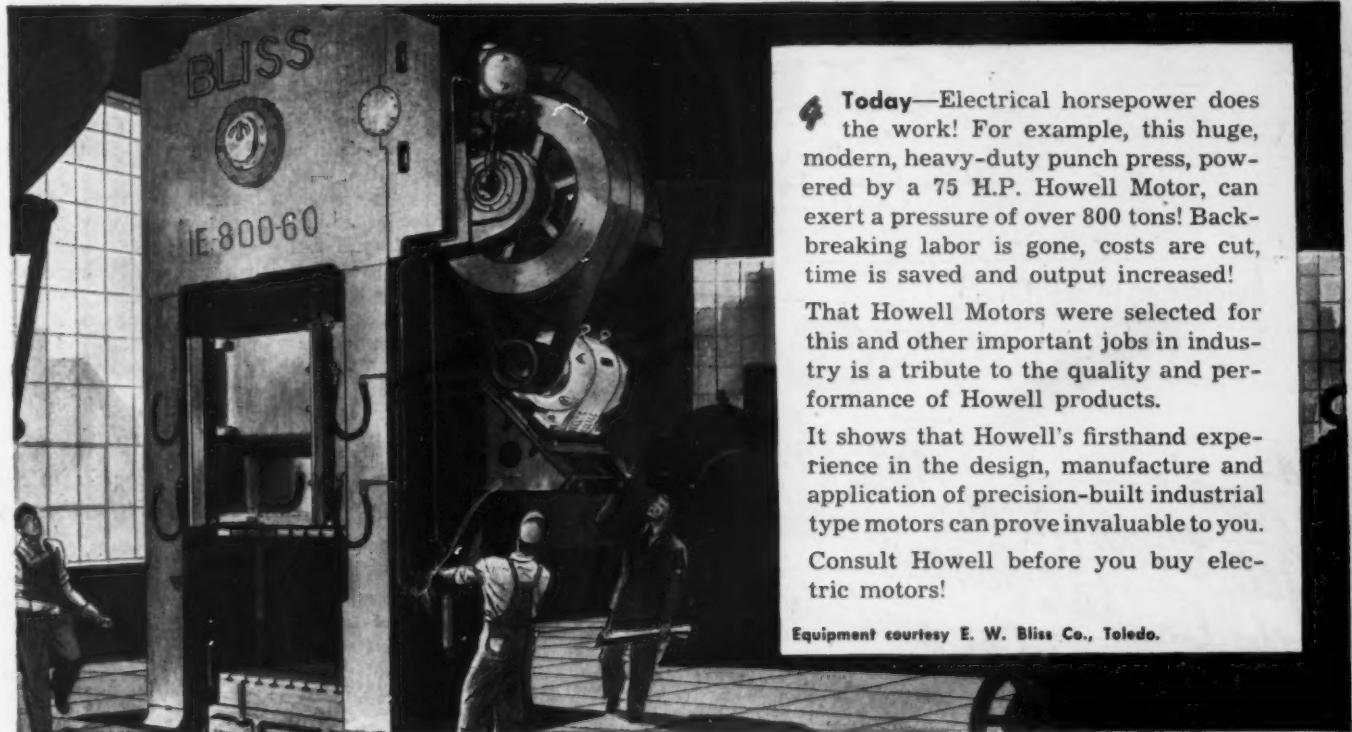


2 1875—By accident, it was discovered that if two direct current dynamos were connected together, one would serve as a generator and drive the other as a motor. Electrical horsepower was here!



3 1900—Result: Electrical horsepower replaced foot power! By 1915, Howell "Red Band" Electric Motors arrived. Soon, these rugged, industrial type motors were widely accepted in many industries.

NOW...A PUNCH PRESS WITH A PUNCH!



4 Today—Electrical horsepower does the work! For example, this huge, modern, heavy-duty punch press, powered by a 75 H.P. Howell Motor, can exert a pressure of over 800 tons! Back-breaking labor is gone, costs are cut, time is saved and output increased!

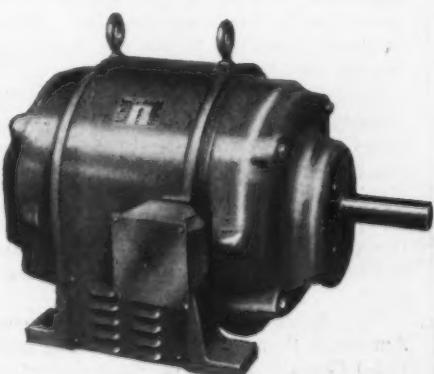
That Howell Motors were selected for this and other important jobs in industry is a tribute to the quality and performance of Howell products.

It shows that Howell's firsthand experience in the design, manufacture and application of precision-built industrial type motors can prove invaluable to you.

Consult Howell before you buy electric motors!

Equipment courtesy E. W. Bliss Co., Toledo.

Free enterprise encourages mass production, supplies more jobs—provides more goods for more people at less cost.



Howell Type F Punch Press Motor

HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Precision-built Industrial Motors Since 1915



more than
80
Oakite
Materials
to solve
your cleaning
problems

EXTRA PROFITS through EXTRA SERVICE

YOUR production cleaning pays unexpected dividends—in time and money saved, production increased, products improved—when you help yourself to Oakite Service.

Your local Oakite Technical Service Representative comes into your plant to help solve a cleaning problem, using modern Oakite materials and methods. He puts on the overalls and goes to work with you—stays at it until you're satisfied. You couldn't get more conscientious service from him if you paid him yourself.

So call him today. Or write Oakite Products, Inc., 54 Thames St., New York 6, N. Y. No obligation.



Technical Service Representatives Located in
Principal Cities of United States and Canada

SPECIFICATIONS

QUANTITY	DESCRIPTION

Fred—
Get these from Anti-Corrosive
the Co. that has more than
1,000 varieties and sizes of
Stainless Steel fastenings
IN STOCK!

FREE! Send for Folder 50R for full information

Anti-Corrosive SINCE 1927
Metal Products Co., Inc.
Manufacturers of STAINLESS STEEL FASTENINGS
CASTLETON ON HUDSON, NEW YORK

ANGLO-AMERICAN, CANADIAN UNIFICATION OF BOLTS, NUTS AND CAP SCREWS

Official British and Canadian standards groups will receive shortly recommendations for bolt, nut and cap screw dimensions which if adopted will mean virtual unification with the American standard. Two series are to be recommended: bolts, nuts and cap screws for heavy duty machinery and a selection based in all but one case, on present proposed American standards for either regular or light series.

The recommendations will be made to Britain and Canada by delegates who represented the trade and technical societies, industry and the armed services of those countries at a recently concluded two-day conference in New York City.

The dimensions discussed at the conference were mostly for hexagon-head bolts and nuts for which the threads are already unified. The range of sizes agreed upon is intended to achieve greater simplification. All of the enormous benefits of interchangeability deriving from the unification of screw threads which these three countries accomplished almost two years ago would be intensified if the recommended series are adopted by Britain and Canada. The belief in informed circles is that they will.

Because of present differences in the size ranges of heads of American and British bolts and nuts (for which the threads are already unified) clearances for wrenching are not identical in the three countries. Bolts and nuts on American military equipment and industrial goods cannot be replaced in Britain with English nuts and bolts.

1-1-1

ASA ANNOUNCES APPROVAL OF NEW FINE-PITCH GEAR STANDARDS

The American Standards Association announces the approval of three new American Standards for fine-pitch gears covering straight bevel gears; design for worms and worm gears; and 20-degree involute system for spur and helical gears.

They are part of the gear standardization program developed by a committee organized under the procedure of the American Standards Association, and sponsored by the American Gear Manufacturers Association and the American Society of Mechanical Engineers.

These standards were originally developed by the AGMA during the war years in answer to the great demand for mass production of small gears of high precision. Fine-pitch gears are essential in the manufacture of computing devices, fire control instruments, small automatic mechanisms and other precision instruments.

The technical content of the new American Standard Fine-Pitch Straight Bevel Gears is almost identical with that

(Please turn to page 272)

YOU GET 50% MORE FROM SYLVANIA FLUORESCENT TUBES!

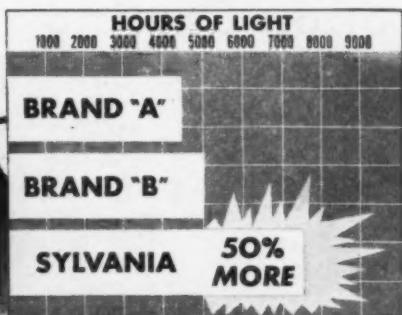
2-YEAR TESTS PROVE SYLVANIA'S SUPERIORITY

Sylvania Fluorescent Tubes offer at least 50% longer life than the other two leading brands.

Exhaustive laboratory tests, with the most popular tube types, definitely prove this statement.

THE CHART TELLS THE STORY!

The chart shown below gives the final results. It shows that Sylvania Fluorescent Tubes lasted an average of 7500 hours, or 50% longer than brand "B", more than 60% longer than brand "A".



SYLVANIA TUBES STAY BRIGHTER!

In addition to their longer life, tests showed that Sylvania Fluorescent Tubes maintained a greater brightness at all times than either brand "A" or "B". Measurements were based on photometric standards obtained from U. S. Bureau of Standards.

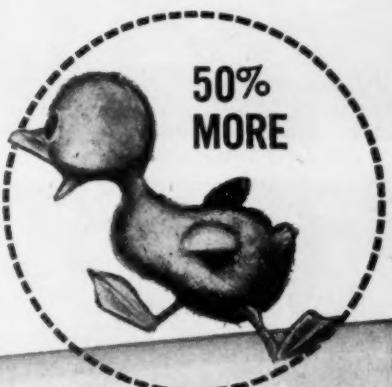
All test conditions were identical. And, today's continuing tests show no deviation from the original data.

CHECK THESE SYLVANIA SAVINGS!

Sylvania Fluorescent Tubes average life of 7500 hours means that, under average conditions, they can be expected to last

6 YEARS IN SCHOOLS
3 YEARS IN OFFICES AND FACTORIES
2½ YEARS IN STORES

For further facts mail the coupon today!



And for 50% more laughs—
see Sylvania's "Beat the
Clock" on CBS-TV.

We challenge you to try
... then we know you'll
buy SYLVANIA Fluores-
cent Tubes

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Please send me complete information about
the life and brightness of Sylvania Fluorescent
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City _____ Zone _____ State _____

SYLVANIA ELECTRIC

FLUORESCENT TUBES, FIXTURES, SIGN TUBING, WIRING DEVICES; LIGHT BULBS; RADIO TUBES; TELEVISION PICTURE TUBES; ELECTRONIC PRODUCTS; ELECTRONIC TEST EQUIPMENT; PHOTOLAMPS; TELEVISION SETS

SUPERIOR

in more than name

To make every gray iron casting meet your exact specifications is the aim of Superior Foundry's complete staff of production casting experts. Such high standards require organization, experience, modern equipment and never-ceasing "Quality Control."



This water pump housing had to be easily machinable yet tough enough to withstand the impact and shock imparted to earth moving equipment. Close grain structure was necessary to insure a leak-proof pump.

...here is the modern equipment behind every Superior Gray Iron Production Casting



Complete Electric Furnace Process



Continuous Drying Ovens



Complete Metallurgical Control



High Speed Continuous Mold Conveyors

THESE are just a few of the modern facilities that enable Superior to produce castings ranging from 1/2 lb. to 1200 lb. in any quantity and to your particular specifications. Whether you want straight cupola gray iron or electric furnace iron castings with or

without alloys, you'll discover that Superior Foundry's complete metallurgical control assures uniform grain structure, adherence to your specifications and a clean, smooth finish. Bring your production casting problems to us today.

SUPERIOR FOUNDRY, INC.

3542 EAST 71ST STREET • CLEVELAND 5, OHIO

Member of: Gray Iron Research Institute • Gray Iron Founders Society

VULcan 3-8000



(Continued from page 270) of the AGMA standard. Modifications are: The clearances have been increased, the tooth thicknesses correspond to those generated by a crown gear in which the tooth thickness and space width are equal, and the maximum face width is limited to three tenths of the cone distance, or 8 in., whichever is smaller. The standard covers generated straight bevel gears of 20 diametral pitch and finer, all shaft angles, and with the numbers of teeth equal to or greater than 16/16, 15/17, 14/20, 13/30 for 90-degree shaft angle.

Interchangeability and high production are important factors in fine-pitch worms and worm gears. The new American Standard for fine-pitch worm gearing is a design procedure covering worms and worm gears with axes at right angles, comprising cylindrical worms and helical threads, the worm gear being hobbed for fully conjugate tooth surfaces.

The American Standard 20-Degree Involute Fine-Pitch System is very similar to the American Standard for Spur Gear Tooth Form, but has a slight increase in whole depth to allow for the greater proportional clearance necessary in fine-pitch gears. The fine-pitch series includes gears of 20-diametral pitch and finer having a 20-degree pressure angle.

These American Standards are being published by the American Society of Mechanical Engineers and when available may be obtained from the ASME, 29 West 39 Street, New York 18, N. Y., or from the American Standards Association, 70 East 45 Street, New York 17.

SUBJECT: ICC 17E-STC (EXPLOSIVES AND INFLAMMABLES)

The Steel Shipping Container Institute, Inc., recently sent the following release about reuse of steel drums, to its membership:

"You are familiar with the fact that during and subsequent to World War II the Bureau of Explosives with the approval of the Interstate Commerce Commission granted permission on application for reuse due to shortage of steel and consequent shortage of these drums.

"The same agency after setting a decision date of March 31, extended this decision date to August 31, 1950, because of erroneous information to the effect that these drums were still in short supply. "Since the only reason for the relaxation of this rule would be a continued shortage of container steel and since that shortage is currently a problem and one which presumably will not improve for many months, we have notified the Bureau of Explosives and the Interstate Commerce Commission that while these drums have not been in short supply during 1950, there is reason to believe that this will not be true in the near future.

"We have, therefore, suggested to the Bureau of Explosives that the cancellation date of August 31, 1950 for reuse be extended indefinitely or until such time as we notify them that the shortage no longer exists."

(Please turn to page 274)



don't gamble with gloves



SEAL BROWN JERSEY GLOVES

Big, thick, fleeced inside. Most economical for warmth and long wear. All popular weights. Sizes for men, women and boys.



REVERSIBLE GLOVES

Made to be switched from one hand to the other, giving almost double wear. White canton flannel in all popular weights . . . band top, knit wrist or gauntlet cuff. Sizes for men, women and boys.

The odds are against you—every time—when you gamble on unknown, unproved work gloves. But if you're looking for a sure thing—a work glove whose superiority, endurance, fitness for the job have been proven time and again—then pick Riegel. Because Riegel gloves (and no other brand) are manufactured from raw cotton to finished glove . . . in the same plant . . . by the same company. And we check on their quality every inch of the way!

WRITE FOR OUR NEW CATALOG. You'll find it brimful of styles to pick from—over 130 of them. And when you choose, remember: with Riegel Work Gloves, you never gamble on quality!

RIEGEL TEXTILE CORP., 342 Madison Ave., New York 17, N. Y.

Riegel
WORK GLOVES

Style WUG
Universal Gas Mask

Safe - Comfortable - Dependable

WILLSON

Gas Masks For Every Hazard

Style WHG
Emergency Type

Style WIG
Industrial Gas Mask

Style WTG
Tank Gauges Mask


WILLSON
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**CONCENTRATION OF INDUSTRY
DECREASING DECLARES
U. S. STEEL ECONOMIST**

Concentration of industry in the United States is decreasing, not increasing, according to the Government's own statistics, according to a statement by Bradford B. Smith, economist of the United States Steel Corporation, presented in the recent Celler Committee hearings.

Noting that legislation to restrict the size and scope of industrial enterprises had been suggested to the Celler Committ, Mr. Smith declared that "everyone who considers proposed legislation of this drastic character should clearly understand that in such proposals all of American industry is on trial; that 'bigness' should not be confused with 'badness'; that power to produce is not power to injure. . .

"As a general observation it should be noted that the Government studies do not tell us nearly as much about competition, as distinguished from concentration, as we would like to know. The two are not the same. Competition means that buyers have a choice between two or more sellers of similar products and, correspondingly, that sellers have a choice between two or more buyers of their products in the same market."

The Government's statistics, he continued, also show:

"In virtually all mass production industries a substantial proportion of the production is provided by a small proportion of the producers. Such kind of concentration is typical of the American productive machine.

"The largest producers have experienced decreasing, not increasing, shares of their respective industries' assets and sales during the last ten years.

"Concentration in the steel industry is approximately the average degree of concentration prevailing among industries generally.

"U. S. Steel's proportion of total steel production has markedly decreased, not increased, over a fifty year period. It has decreased from 66 per cent in 1901 to 33 per cent in 1949.

"The steel industry, with the rise of many other industries, has come to occupy a less 'dominant', not a more 'dominant', position in American industry.

"In short, the claim of increasing industrial concentration has been raised in defiance of the facts."

Reviewing a tabulation of the U. S. Department of Commerce covering a period from 1936 to 1946, Mr. Smith said it shows "that over the ten-year span the assets and the income of the 800 companies that were smaller increased at double the rate of the assets and income of the 200 largest corporations. The increase in sales of the 800 smaller corporations was two-thirds greater than the increase in sales of the 200 largest corporations. The statistical conclusion is that concentration is decreasing rather than increasing."

In addition, a compilation by the Federal Trade Commission in 1949 permits only the conclusion "that the degree of

(Please turn to page 276)

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HIRES FASTENS CORK TO METAL

Operation: bonding cork insulation to Hires Root Beer dispenser.

Requirements: increase production, improve insulation efficiency by eliminating previous mechanical fasteners.

3M Results: the proper 3M Adhesive produced a 3-fold improvement. Application time was speeded by eliminating mechanical fasteners, heat loss was decreased, and the proper adhesive sealed the cork against moisture penetration and loss of insulation efficiency.



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Operation: protecting outdoor switch-gear housings from corrosion, rust, weathering and abrasion.

Requirements: long-lasting, easy-to-apply coating that has high resistance to all kinds of weather conditions.

3M Results: EC-1034 forms a tough, rubberized coating that adheres to and protects all exposed metal surfaces throughout the wide range of service conditions which this equipment will encounter.

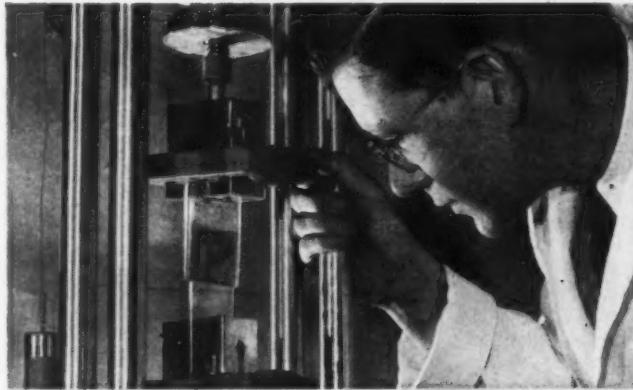


VOSS SEALS AGITATORS

Operation: seal together two halves of a plastic washing machine agitator.

Requirements: material must withstand severe mechanical stresses, extremes in water temperatures, and be unaffected by bleaches, detergents.

3M Results: 3M Sealer EC-801 gives a flexible, non-absorbing gasket. Easy to apply, cures chemically to a perfect seal. Single operator produces 40 units an hour, with a material cost of less than 6¢ per unit.



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(Continued from page 274)

concentration in the primary steel industry is less than the average concentration in . . . 26 selected industries; the number of industries in which concentration is greater than it is in the steel industry is about $1\frac{1}{2}$ times the number of industries in which it is less, this being substantially true regardless of the number of companies whose combined share is taken as indicative of concentration," Mr. Smith said.

TOUGH NEW PLASTIC ANNOUNCED BY U. S. RUBBER CO.

Development of a tough new plastic which promises to become one of the basic raw materials of the rubber industry, was recently announced by United States Rubber Company.

The new plastic bridges the gap which has existed between soft rubber and hard rubber for almost a century, the company said. It fulfills an urgent need for



Drive gear molded from Enrup, which has been operating in 36" heavy duty lathe for more than six months.

a high strength material which is resistant to abrasion and chemicals and at the same time can be produced in varying degrees of flexibility ranging between elastic soft rubber on one hand and brittle hard rubber on the other.

One of its outstanding uses is for the manufacture of high strength, low-cost gears to replace metal gears in such applications as heavy-duty lathes, household appliances, plating barrels, automotive timing devices and dynamometers.

Gears made of the new plastic have been operating for more than a year in applications where conventional metal gears have failed within a few weeks. These gears were molded in one piece to very close tolerances which eliminated the need for elaborate finishing operations.

The plastic is particularly suited for washing machine parts where its resistance to the newer type of synthetic detergents has given it an advantage over metal.

Among the other promising applications for the plastic are: fuel pump parts, battery cases, dies and jigs, valve seats, buckets for carrying chemicals, plating

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barrels, filter press plates, photostat separator plates, tote boxes, bearings, electrical insulators, and various automotive parts such as camshaft timing gears, water pump impellers, ignition coil housings, distributor caps, low-load and low-speed bearings and bushings.

"We believe this new plastic is one of the most significant developments in the rubber industry since the war," Ernest G. Brown, vice president and general manager of the company's mechanical goods division, said.

"It has demonstrated remarkable toughness, resistance to abrasion and resistance to the deteriorating effects of oils, solvents, acids and mild alkalis. It is light in weight and extremely stable at high temperatures to 250° F. It has good resistance to fire and its high dielectric strength makes it a good electrical insulator. It is thermosetting.

"It has an impact strength which is superior to most plastic materials now being marketed and it can be molded economically in complicated shapes by either compression or transfer methods."

The new plastic will be marketed under the trade name "Enrup" by the company's mechanical goods division.

It is now in production in two company plants located at Fort Wayne, Ind., and Passaic, N. J., and is available in the form of sheets, rods, tubes, gear blanks and as molded parts.

MILPAK GRADE RULES READY FOR NHLA COMMITTEE

At a conference held June 1st in the Chicago headquarters of the National Hardwood Lumber Association, Chief Inspector William H. Nelson of N.H.L.A. and J. L. Stearns of the Timber Engineering Company completed the final draft of a proposed grade rule for Milpak, the new convenient packaged hardwood lumber developed from low grade material.

The new grade rules define the minimum cutting sizes, required average size of Milpak pieces and minimum quality standards with respect to number, size, and type of defects permissible. It covers both kiln dried and air dried stock as well as bundling requirements.

The research on Milpak is now beyond the laboratory stage of development. Indications are that before the year is out a number of hardwood manufacturers will be converting some of their lower grades into this new form of semi-refined lumber.

John W. McClure, Secretary-Manager of the National Hardwood Lumber Association and others on his staff predicted that Milpak will find markets in which hardwood lumber has not previously entered as extensively as it should. The principal markets, of course, are the large furniture and box plants.

For further information on Milpak, or low grade hardwood utilization write C. A. Rishell, Director of Research, Timber Engineering Company, Washington 6, D. C.

(Please turn to page 278)

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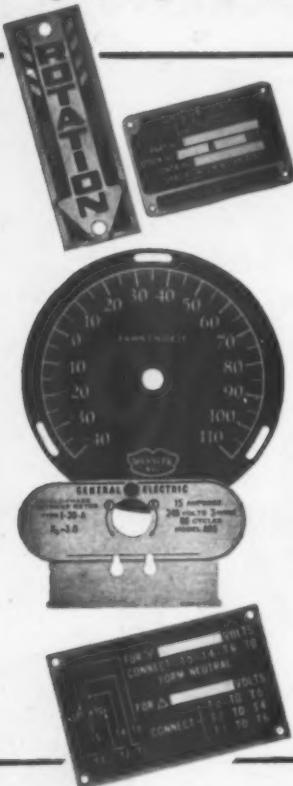
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GERMANY, EXPORT, IMPORT PROCEDURES AND REGULATIONS

American businessmen interested in doing business with firms in Germany can obtain a new report summarizing trade regulations and other pertinent trade information, the Office of International Trade, U. S. Department of Commerce, announces.

The report, "Doing Business with Germany," is a June, 1950 revision of previous reports on this subject. It covers both the Western zones of Germany and Western sectors of Berlin and the Soviet zone and Soviet sector of Berlin. Among the subjects discussed are export and import procedures and regulations, other types of business transactions, pricing and exchange rates, foreign exchange control, investments and financial transactions, samples, German representation of U. S. firms and U. S. representation of German firms, licensing of patents, copyrights and trademarks, special contract provisions, business travel to Germany and travel of German businessmen to the U. S.

In addition the report contains a section on trade fairs and exhibitions scheduled to take place in Germany for the balance of this year and the first half of 1951.

Copies of the report are available upon request from U. S. Department of Commerce field offices or from the U. S. Department of Commerce, Washington 25, D. C.

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40-PAGE NON-COMMERCIAL BOOKLET ON GREASES

"The Fundamentals of Lubricating Greases and Their Application" are covered graphically and colorfully in a new educational booklet of that title published by Shell Oil Company.

The new booklet, which contains no advertising and is available free, is the eleventh and latest in Shell's "Panorama of Lubrication" series, used in industry and schools for more than 15 years. It is printed on heavy, glossy paper and contains 40 pages of text, photographs and drawings, many in color.

The basic theme of the booklet is its explanation of the scientific principles that make greases a separate category of lubricants. They are far more than "thickened oils," the booklet explains. They have distinct and specially-planned qualities that fit them for jobs that oils are not meant to do.

Besides describing the make-up and general character of greases, the booklet discusses the jobs greases can do best and tells how greases are made to do particular jobs. A seven-page section, containing many illustrations, shows how greases function in anti-friction bearings, centralized lubrication systems (such as those in blast furnaces), paper making machines, Diesel-electric locomotives, textile machinery, metal-working presses and steel-mill machinery. The booklet also explains the practical limitations of greases.

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Responsibility For Materials

(Continued from page 93)

must compile this information for himself, he is, and should be, turned to for all types of information, advice, and direction in the matter of materials. Such individuals have sufficient information, responsibility, and stature to sit in on the councils of top management as major production policies are formulated.

The organization phase of materials management includes the development of the structure and personnel necessary to carry out the responsibility for materials supply. Included in this responsibility and constituting an important factor is the matter of satisfactory supplier relations. This factor has been strongly stressed in recent purchasing literature, but materials management is broader than that. Perhaps some such logical organizational breakdown as that found in Dr. J. E. Walters' book, *Modern Management*, would point the way. He breaks down the major management functions into the management of Men, Machines, Money, Methods, and Materials.

The control phase of materials management includes adequate control over inventories balanced against the prevention of shutdowns and delays. This is a major function and should be in the hands of a major executive. Professor Howard T. Lewis (*Procurement, Principles and Cases*, p. 234) concurs by placing in italics a statement that production inventory should be the responsibility of some one person, and that person should rank with the company's top executives.

"Materials Management" as a descriptive term is more than an attempt to change nomenclature. It is an attempt to bring about a *mental revolution* in the thinking of technicians and top executives alike. Semantics, the science of meaning, has taught us that "a rose by any other name" may not actually smell as sweet. The more widespread use of the term "Materials Management" might add real prestige and effectiveness.

There is already ample precedent for the title "Director of Materials" or "Materials Manager" in such industries as the airframe, diesel engine, prefabricated housing, electronics, and air transport. Accompanying this article is a composite chart of the materials divisions or departments found in five representative companies in these fields.

(Please turn to page 282)

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CONTEMPORARY of contemplative Cal, Alex Harper succeeded to the presidency of the Brass mills in 1924, shortly after they became known by their present name, The Bristol Brass Corporation. Soon he pruned production back to the fundamentals of Brass sheet, rod, and wire.

That year, business basked in the ominously bright weather that brews hurricanes. Bids roared and soared on the stock exchange. Everything was on the up-and-up. But Alex

Harper was unimpressed. His practiced weather-eye saw danger signals. And he kept working doggedly to reduce the mill's debts, to calm down expansionist dreams, and keep the financial house in order. So when 1930 struck in all its fury, Bristol Brass was sailing with a well-trimmed ship that weathered the heavy seas and came safely through with few layoffs, even on 32 hours a week.

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Brassmen were working when others were not. And Bristol management has always charged itself with the responsibility to be ready for come-what-may. This philosophy has bred several generations of businessmen who are direct and practical in all dealings. No, you won't find an ounce of shirt-stuffing behind any desk at Bristol. What you will find is a team of experienced Brassmen who know how to handle your business the quickest, easiest, and most satisfactory way.

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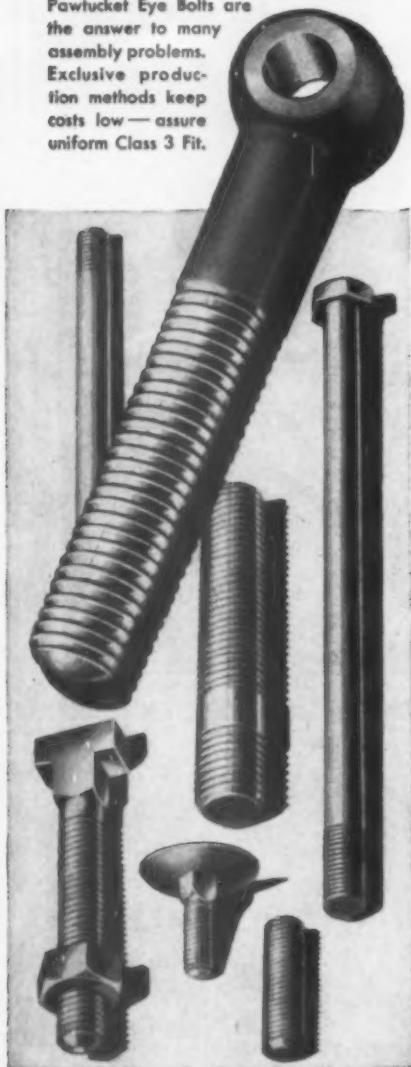
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Responsibility For Materials

(Continued from page 280)

In such an organization, the Materials Director would logically be recruited from the ranks of purchasing personnel. This would be a movement for such personnel away from technical specialization as purchasers, in the direction of general administration and top management, where many executives called Purchasing Agents already find themselves and others should be. It is also a movement for the function itself from the relatively limited scope of purchasing activities to a broader, more influential and more effective place in the policy and administrative phases of management. Perhaps some clairvoyant is already looking forward to a periodical in this field, called *Materials Management*, which might carry on its masthead the historical subtitle, "formerly Purchasing."

111

Education For P.A.s

(Continued from page 113)

within the foreseeable future; what expansion of the firm or of the purchasing department is contemplated; are logical purchasing divisions set up for the various commodity groups with which the firm is concerned; what are the educational or technical requirements of the various purchasing groups; etc.

The next step, once the needs of the department are determined, is the selection of the personnel to receive the training. Regardless of the source from which these persons are selected, candidates should all have the necessary qualities of intelligence, honesty, integrity, leadership, etc., to uphold the reputation of the firm and of its purchasing department.

Once these two decisions have been made, the third step is to determine the method of training. The method chosen will depend on many things, such as the size of the firm and the size of the purchasing department itself, the number of persons to be trained at one time, whether the training is to be long-term or short-term project, how much value the firm attaches to a formal in-service training program, etc.

Training is typically concerned with the preparation of new personnel, but may also be used to advantage for purposes of refreshing and maintaining the efficiency of established personnel. Both of these as-
(Please turn to page 284)

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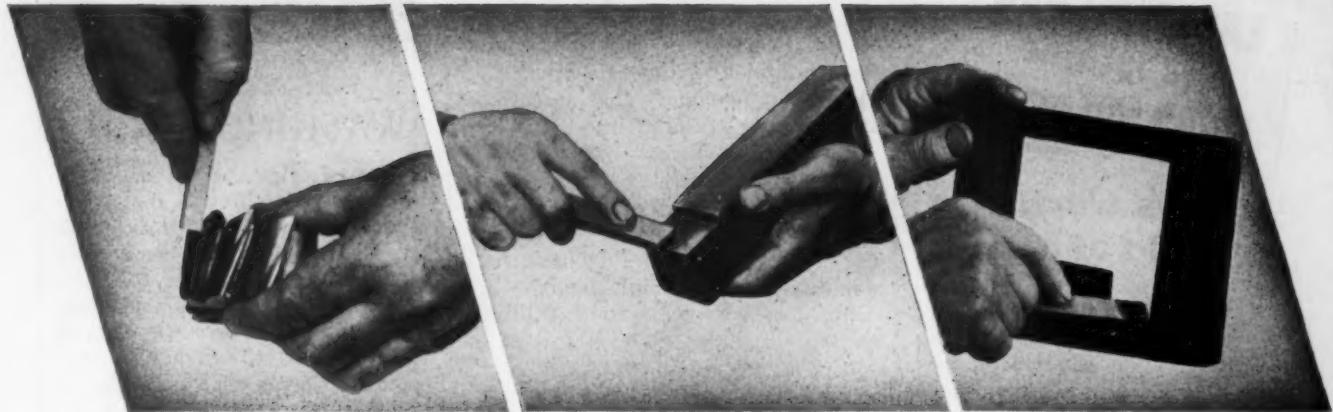
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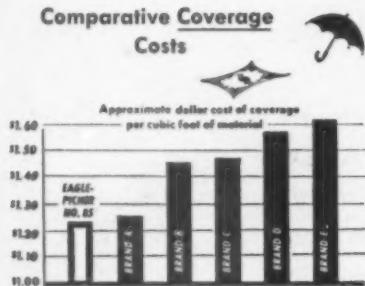
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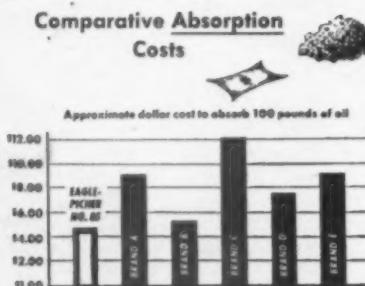
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Education For P.A.s

(Continued from page 282)

psects can adequately be taken care of by one or more of the three different types of training usually found in a full training program: general background training, specific position training and continuous or maintenance training.

Training of groups is more economical of time and effort than training of individuals. However, group training requires careful methods. Lectures and departmental meetings, in particular, tend to become too passive. Group training methods include:

1. *Classroom study* may be used to impart general background material or theoretical knowledge for specific position training.

2. *Lectures* can be used primarily to impart selected information in a logical manner, in minimum time. Participation in a question and answer period should be encouraged.

3. *Conferences or forums* make good use of group knowledge and thinking, but are not suitable for the presentation of new material nor with inexperienced groups that are not competent to discuss the problems. Competent leadership is essential in this method.

4. *Demonstrations* can be used to dramatize or illustrate a procedure, and are most effective as supplements to other methods. Sitting in with executives or policy forming boards is one way of using this technique.

5. The *case problem* method can be used if the group is small enough for close supervision.

Training of individuals has the advantage of requiring active participation on the part of the trainee. However, it requires more supervisory time in relation to the results obtained. Some useful methods are:

1. *Research projects* can be of benefit to the purchasing department and to the firm, as well as the trainee, if carefully selected. Research underlies the discovery, verification, systematization, and interpretation of principles of sound business conduct.

2. *Papers and reports*, based on research projects, conferences, committee investigations, etc., can enhance the value of training by other methods.

3. *Understudy* to an older officer is one of the easiest and oldest methods of training, since the individual can learn while actually doing the work.

4. *Internships* usually consist of a
(Please turn to page 286)

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able does not constitute training. There is a wide gap between the possessing of information and the ability to use that information intelligently in the satisfactory performance of work. This ability must be developed, trained, and molded to fit the needs of the firm and its purchasing department.

The training program, however organized, should be regarded as a business proposition. It should be worth more to the firm in terms of value received than it costs to operate the program.

↑ ↑ ↑

Sure! The P.A. Can Cut Costs, but . . .

(Continued from page 76)

concern whose factory in a completely built-up section of the city already occupied all their available property, yet found it absolutely necessary to obtain more floor space. Adding another story to any of their existing buildings was not feasible from a manufacturing layout standpoint, besides being excessively expensive at today's construction costs. Their purchasing agent had long known that it was costing them just about as much to make a certain component as to purchase it out-

side. His suggestion that they cease its manufacture and buy it from others was accepted. The floor space thus saved was ample to serve their needs for expansion during the foreseeable future.

Management Must Be Sold

Numerous other means of reducing costs were suggested and discussed. It was generally agreed that if anything like the same amount of time and effort were applied by purchasing officers to cost reduction at this stage of business, as they had devoted to digging up sources of urgently needed materials in short supply during the war years, then indeed the status of Purchasing in the eyes of Management would not only be maintained, but substantially enhanced.

It was also agreed that throughout much of the purchasing field, the ability and the desire to contribute effectively to cost reduction was there. What was too often lacking was the opportunity to properly survey and analyze the methods of cost reduction now lying fallow, ready for the ploughshare of systematic research.

To afford the great majority of procurement officers the facilities for attacking the problem in a fully effective manner, it was recognized that the attitude of a large segment of top executives, particularly in the smaller enterprises, who have not yet been exposed to the manifold advantages of a completely functioning purchasing division, must undergo some revision. They must realize the loss that is resulting from this neglect, and the advantages possessed by competitors whose purchasing officers contribute much more to profitable operations than merely securing raw materials and supplies when needed. In other words, the modern conception of Procurement must be sold to them, and the salesmen most advantageously situated to accomplish this are the heads of their own purchasing departments.

Where it still exists (and the instances are many) the problem presents a challenge to the ambitious purchasing agent, calling for his best thought and effort. Never has the need for solving it been more pressing than it is today and will continue to be during the coming years. It has been effectively "licked" many times in the past, and it will be overcome in the future, but only by bringing all the purchasing agent's resources of diplomacy, persuasion, and good judgment to bear on the problem.

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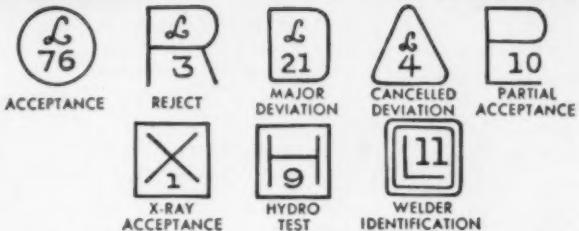
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LETTERS . . .

BIRTH OF PURCHASING

In some of my talks I refer to the Purchasing Department being in its infancy 40 years ago. Others in talks and articles refer to the Purchasing Department being established at the turn of the century.

Is there any information any place that will tell us exactly when purchasing departments got started? Is there any information to show the rate at which this department was used prior to the time N.A.P.A. was established? Such information would be most helpful in giving us amateurs a better way of talking of where we came from and how fast we have grown.

What do you have to offer?

G. W. Aljian, Director of Purchasing California and Hawaiian Sugar Refining Corp., Ltd.
San Francisco 5, Calif.

● The purchasing department is a logical and inevitable part of large scale industrial organization, and the development of purchasing is parallel to the growth of large scale industry. Purchasing departments and purchasing agents did exist and were well established prior to 1900, and were known by these titles in industries that are inherently large, like the railroads, and in the more scattered instances of individual operations in other fields which had grown to a size where the segregation of purchasing as a specialized function and activity was indicated. The New England Purchasing Agents Association was organized in 1905, ten years before the National Association. Its membership, though small, represented diversified types of industry, including a shipyard, a public utility, candy, shoe, and machinery manufacturing. The Buffalo and Denver Associations also antedate N.A.P.A.

Lingley's "History of N.A.P.A." opens with the statement: "Prior to the year 1913 several attempts had been made to form a National Association of Purchasing Agents." He recalls that a prospect list of some 300 purchasing agents in the New York area was compiled for invitation to the organization meeting. When the Association was actually formed, on a national scale, two years later, the roster of the Board of Directors shows purchasing well established in a wide diversity of industries in all sections with representatives from twenty cities in New York, New Jersey, Pennsylvania, Ohio, Connecticut, Massachusetts, Wisconsin, South Carolina, and California.

But while purchasing departments and purchasing agents did exist in the early years of the century, group and professional consciousness among purchasing men had not yet developed. If a definite date is to be set for the emergence of purchasing from its state of "infancy", the year 1915 would be most logical choice.

It is more than coincident that the year 1915 witnessed several completely independent developments that were symptomatic of this change, and that laid the foundation of modern purchasing. In that year, N.A.P.A. achieved a permanent organization after two years of desultory interest, with 140 members and affiliated local groups in New York, Philadelphia, Pittsburgh, and Columbus. In Chicago, Rochester, St. Louis, and Los Angeles, independent local groups were formed, which subsequently joined the national organization. At Springfield, Mass., L. F. Boffey of American Bosch Magneto Corporation launched "The Purchasing Agent" (now PURCHASING), the first journal devoted to purchasing. McGraw-Hill Book Company published "Purchasing" by C. S. Rindsfoos, the first text on the subject. At New York University, George Heilman of Otis Elevator Company started and taught the first college course in purchasing. The combination of these events, independently conceived and occurring in widely separated parts of the country, mark a turning point that may truly be regarded as the beginning of purchasing as a management science and as a profession, as it is known today.—Ed.

JULY BEST

I read with interest your July issue. There is no question in my mind but what you have taken a step forward in serving purchasing with your splendid publication. While the June issue was very splendid, I felt that if the pattern was a definite one for all issues, readers would lose much of the value that the magazine usually gives with each issue.

I was particularly impressed with George Aljian's article (page 97) as well, and even more so with the article entitled "Unscramble Your Job" by Donald A. Laird (page 95).

Arthur G. Pearson
Director of Purchasing Practice
American Meat Institute
Chicago 5, Ill.

HOW MANY PERSONS IN PURCHASING DEPARTMENT?

The question has arisen in our company as to the number of persons, including the purchasing agent, who are required to efficiently operate a purchasing department.

We are a manufacturer of textile machinery, employing about 90 people, with expenditures for supplies and material of \$200,000 to \$250,000 per year.

We would appreciate receiving any information that you may have which would answer this question.

E. R., New Jersey.

● So many variables are involved in the purchasing operation that it is difficult to find a definite answer to your inquiry regarding personnel requirements. As between two purchasing programs of equal dollar magnitude, one may involve a large variety of materials or purchasing to special needs, whereas another may consist of relatively few and standard materials bought on a continuing contract basis. Similarly, one purchasing department may have responsibility for invoice checking, follow-up, and stock records, whereas another may confine its activities to the actual buying. Consequently it might be misleading to try and state any definite correlation between the number of personnel and the annual dollar expenditures.

Since the question frequently arises, we did make a survey on this subject in 1944. Reports were received on 1,248 departments. These were analyzed according to annual volume of purchases, showing the following situation:

Volume of purchases up to \$500,000 per year: Average number of persons in purchasing department—3.5. (This figure goes up to 3.9 where purchasing is done for branch operations as well. There are numerous instances of the "one man department" in this bracket, but none where purchasing exceeds \$400,000 annually.)

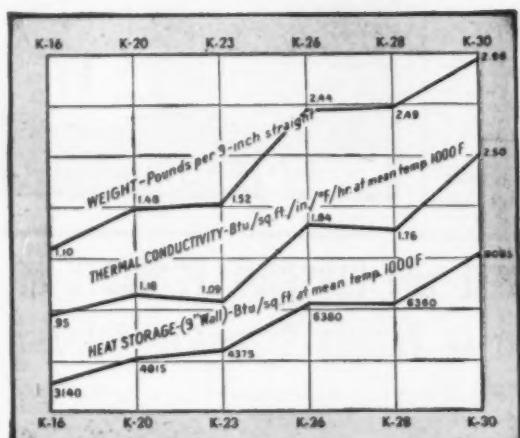
Volume of purchases, \$500,000 to \$1,000,000: Average number of persons in purchasing department—5.2 for single plant, 9 in companies with one or more branch plants.

Volume of purchases, \$1,000,000 to \$5,000,000: Average number of persons in purchasing department—8 for single plant, 9.9 in companies with one or more branch plants.—Ed.

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tion on the advantages, applications, composition, forms, properties and sealing techniques of Paisley case sealing adhesives for hand or machine sealing operations. A special section describes all the well-known automatic case sealing machines. The booklet discusses interior packing techniques and use of cushioning materials, sealing methods, and contains a glossary of container terms.

TRAINING FILM ON HANDLING AND UNLOADING FREIGHT

Training film showing how to handle and unload freight safely, is announced by the National Safety Council, 425 No. Michigan Ave., Chicago 11, Ill. It is available in the usual 35 mm sound slide-film, and in a 16 mm film for sound-motion projectors. Information on prices for outright purchases, preview or rental available on request.

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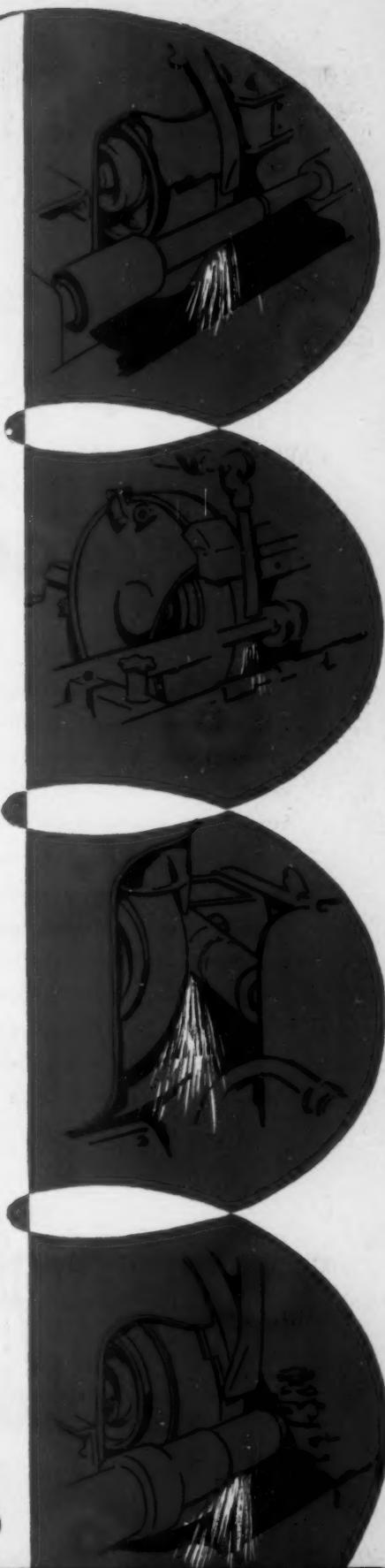
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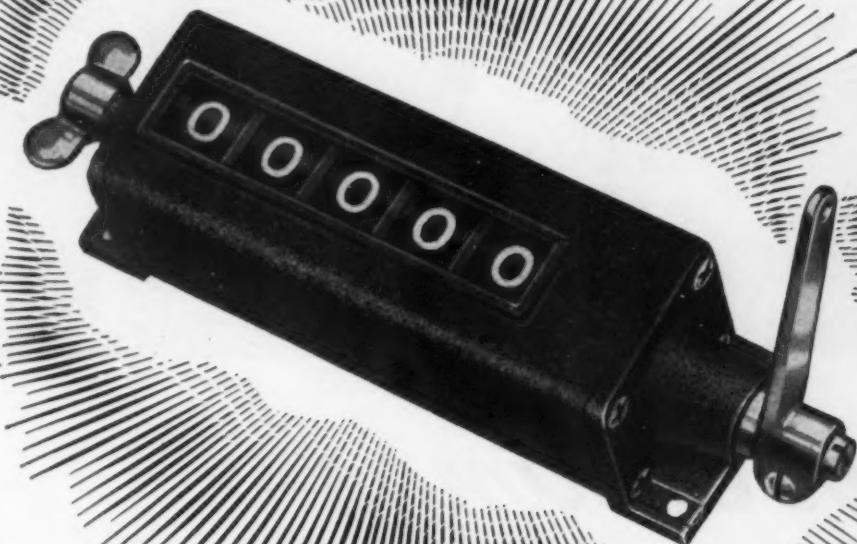
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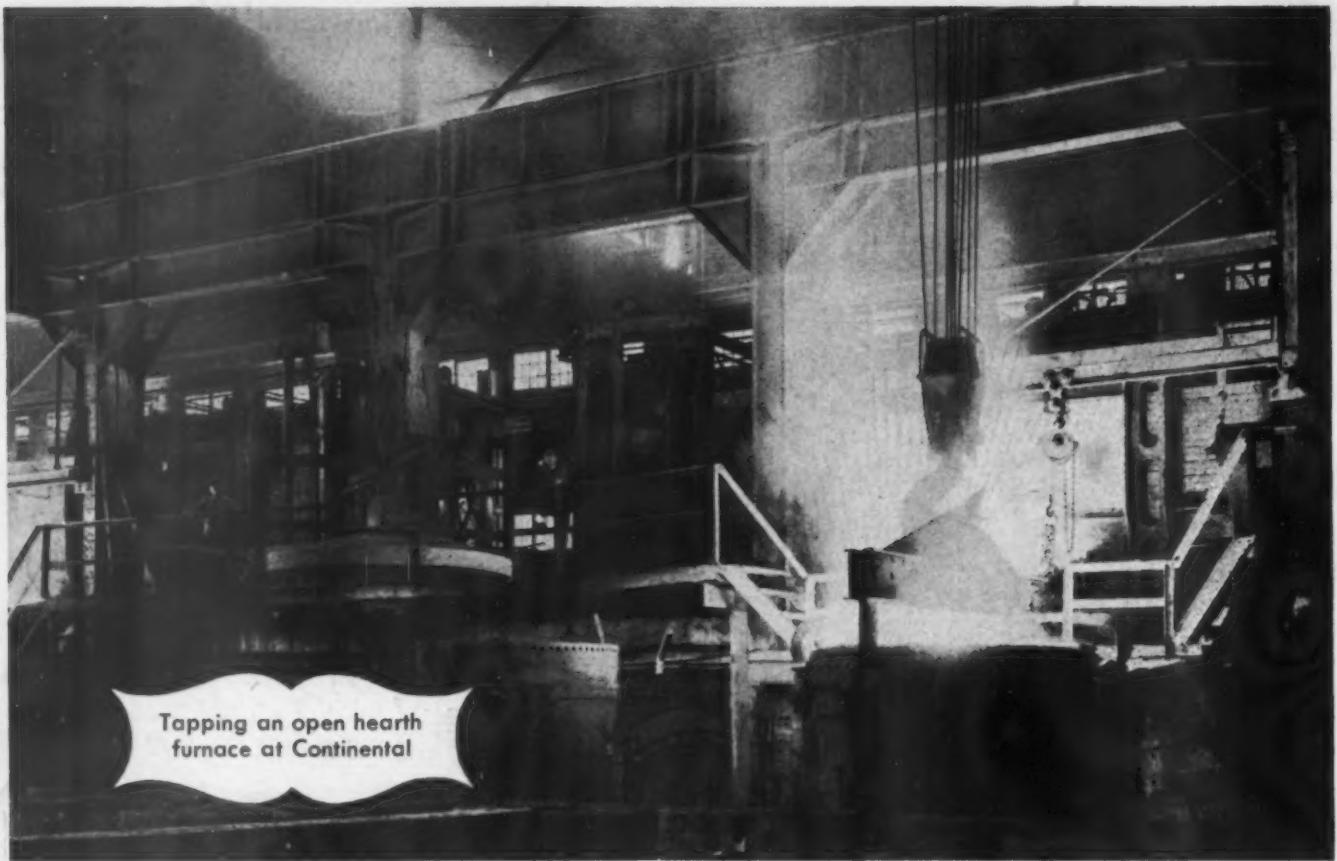
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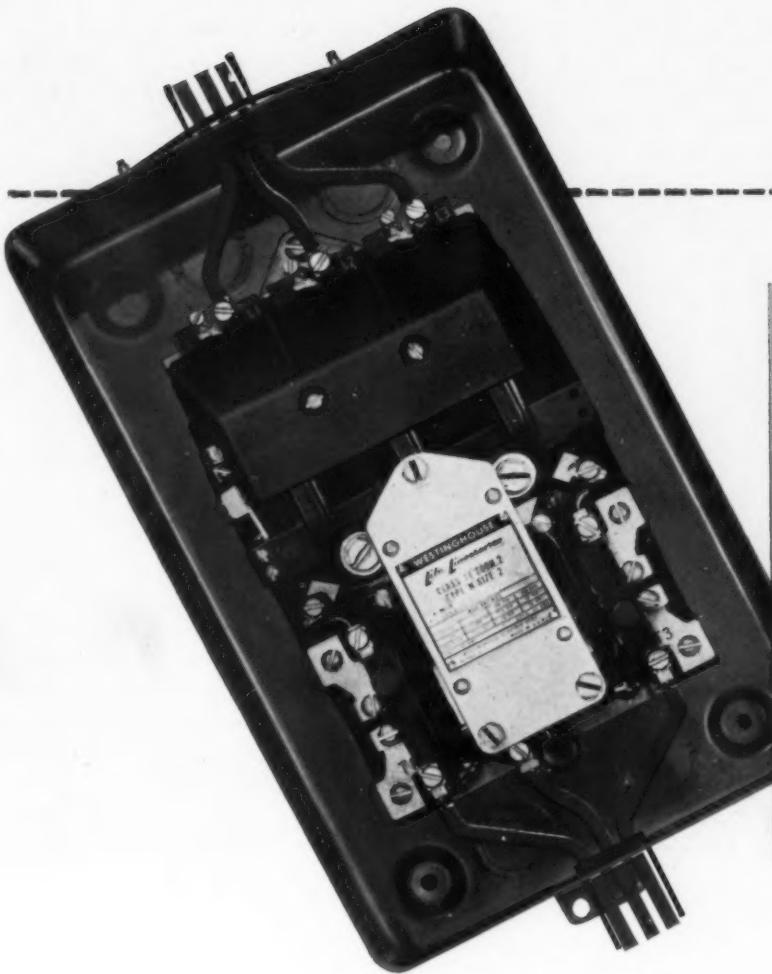
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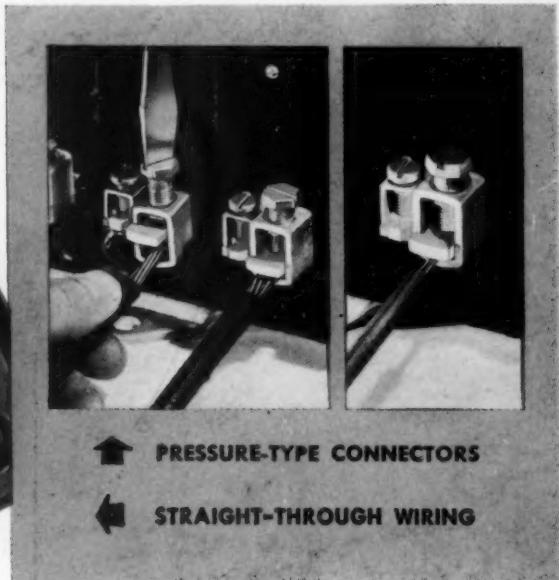
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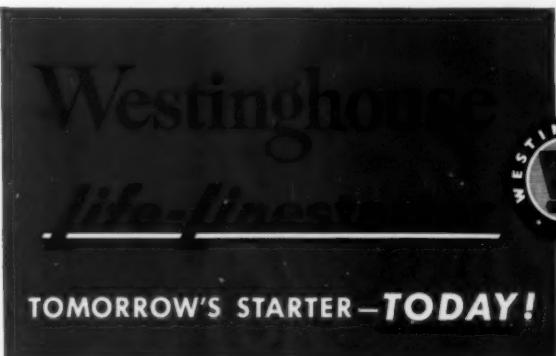
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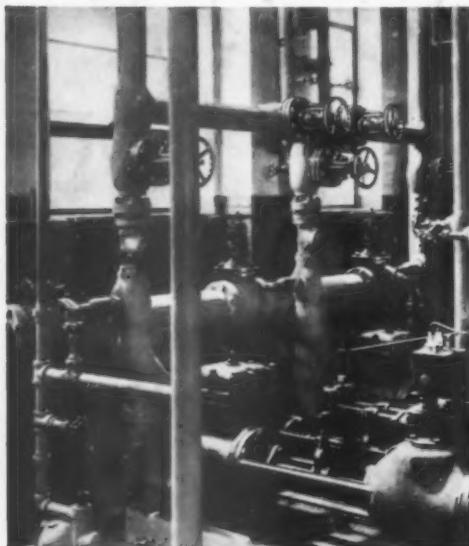
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